DCR-HC23E/HC24E/HC26/HC26E/HC35E

RMT-830

SERVICE MANUAL

LEVEL 1

Ver 1.0 2006.01

Revision History

US Model
Canadian Model
AEP Model
UK Model
East European Model
North European Model
E Model
Argentine Model
Australian Model
Brazilian model
Chinese Model
Hong Kong Model
Korea Model

Photo: DCR-HC35E

N MECHANISM (MDX-N110)

Link

- SPECIFICATIONS
- SELF DIAGNOSIS FUNCTION
- INSTRUCTION MANUAL
- MODEL INFORMATION TABLE
- ACCESSORIES

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Mini DV Digital Video Cassette

DIGITAL VIDEO CAMERA RECORDER

SONY®

DCR-HC23E/HC24E/HC26/HC26E/HC35E_L1
9-876-927-41

Sony EMCS Co.

2006A500-1
© 2006.1
Published by DI Technical Support Department

These specifications are extracted from instruction manual ofDCR-HC23E/HC24E/HC26E/HC35E.

Self Diagnosis Supported model

HANDYCAM

InfoLITHIUM P SERIES

SPECIFICATIONS

System

Video recording system
2 rotary heads, Helical scanning system
Audio recording system
Rotary heads, PCM system
Quantization: 12 bits (Fs 32 kHz, stereo 1, stereo 2), 16 bits (Fs 48 kHz, stereo)
Video signal
PAL color, CCIR standards
Usable cassette
Mini DV cassette with the Mini DV mark printed
Tape speed
SP: Approx. 18.81 mm/s
LP: Approx. 12.56 mm/s
Recording/playback time
SP: 60 min (using a DVM60 cassette)
LP: 90 min (using a DVM60 cassette)
Fast forward/rewind time
Approx. 2 min 40 s (using a DVM60 cassette and rechargeable battery pack)
Approx. 1 min 45 s (using a DVM60 cassette and AC Adaptor)
Viewfinder
Electric viewfinder (color)
Image device
3.0 mm (1/6 type) CCD (Charge Coupled Device)
Gross: Approx. 800 000 pixels
Effective (movie): Approx. 400 000 pixels
Lens
DCR-HC23E:
Carl Zeiss Vario-Tessar
20 × (Optical), 640 × (Digital)

DCR-HC24E/HC26E/HC35E:
Carl Zeiss Vario-Tessar
20 × (Optical), 800 × (Digital)
Focal length
f=2.3 ~ 46 mm (3/32 ~ 1 13/16 in.)
When converted to a 35 mm still camera
In CAMERA: 44 ~ 880 mm (1 3/4 ~ 34 1/32 in.)
F1.8 ~ 3.1
Filter diameter: 25 mm (1 in.)
Color temperature
[AUTO], [ONE PUSH], [INDOOR] (3 200 K), [OUTDOOR] (5 800 K)
Minimum illumination
5 lx (lux) (F 1.8)
0 lx (lux) (during NightShot plus function)*1

*1 Objects unable to be seen due to the dark can be shot with infrared lighting.

Input/Output connectors

Audio/Video output
10-pin connector
Video signal: 1 Vp-p, 75 Ω (ohms), unbalanced
Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced
Chrominance signal: 0.3 Vp-p, 75 Ω (ohms), unbalanced
Audio signal: 327 mV (at load impedance 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
USB jack (DCR-HC23E/HC24E/HC26E)
mini-B
DV input/output (DCR-HC26E)
i.LINK Interface (IEEE1394, 4-pin connector S100)
DV output (DCR-HC23E/HC24E)
i.LINK Interface (IEEE1394, 4-pin connector S100)

LCD screen

Picture
6.2 cm (2.5 type)
Total dot number
123 200 (560 × 220)

General

Power requirements
DC 7.2 V (battery pack)
DC 8.4 V (AC Adaptor)
Average power consumption
During camera recording using the viewfinder 1.8 W
During camera recording using the LCD 2.1 W
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Storage temperature
-20 °C to + 60 °C (-4 °F to + 140 °F)
Dimensions (approx.)
65 × 79 × 113 mm
(2 5/8 × 3 1/8 × 4 1/2 in.) (w/h/d)
Mass (approx.)
DCR-HC23E/HC24E/HC26E:
360 g (12 oz) main unit only
420 g (14 oz) including the NP-FP30 rechargeable battery pack and DVM60 cassette.

DCR-HC35E:
370 g (13 oz) main unit only
430 g (15 oz) including the NP-FP30 rechargeable battery pack and DVM60 cassette.

Supplied accessories
AC Adaptor (1)
Mains lead (1)
Handycam Station (1) (DCR-HC35E)
Wireless Remote Commander (1) (DCR-HC24E/HC35E)
A/V connecting cable (1)
USB cable (1) (DCR-HC24E/HC35E)
Lens cap (1)
Rechargeable battery pack NP-FP30 (1)
CD-ROM “Picture Package Ver.1.5.1” (1)
21-pin adaptor (1) (DCR-HC35E)
Operating Guide (1)
See page 6.

Handycam Station DCRA-C151 Input/Output connectors (DCR-HC35E)

Audio/Video output
10-pin connector
Video signal: 1 Vp-p, 75Ω (ohms), unbalanced
Luminance signal: 1 Vp-p, 75Ω (ohms), unbalanced
Chrominance signal: 0.3 Vp-p, 75Ω (ohms), unbalanced
Audio signal: 327 mV (at load impedance 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
USB jack
mini-B
DV input/output
i.LINK Interface (IEEE1394, 4-pin connector S100)

AC Adaptor AC-L25A/L25B

Power requirements
AC 100 - 240 V, 50/60 Hz
Current consumption
0.35 - 0.18 A
Power consumption
18 W
Output voltage
DC 8.4 V*2
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Storage temperature
-20 °C to + 60 °C (-4 °F to + 140 °F)
Dimensions (approx.)
56 × 31 × 100 mm (2 1/4 × 1 1/4 × 4 in.) (w/h/d) excluding the projecting parts
Mass (approx.)
190 g (6.7 oz) excluding the mains lead

*2 See the label on the AC Adaptor for other specifications.

Rechargeable battery pack (NP-FP30)

Maximum output voltage
DC 8.4 V
Output voltage
DC 7.2 V
Capacity
3.6 Wh (500 mAh)
Dimensions (approx.)
31.8 × 18.5 × 45.0 mm
(1 5/16 × 3/4 × 1 13/16 in) (w/h/d)
Mass (approx.)
40 g (1.5 oz)
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Type
Lithium ion

Design and specifications are subject to change without notice.

Model information table

Model	DCR-HC23E	DCR-HC24E	DCR-HC26	DCR-HC26E	DCR-HC35E
Destination	AEP, EE, NE	AEP, UK, EE, NE	US, CND, E, AR BR, KR	NE, E, AUS, CH, HK	AEP, UK, EE, NE
Color system	PAL	PAL	NTSC	PAL	PAL
DV Interface	OUT	OUT	IN/OUT	IN/OUT	IN/OUT (Note)
Remote commander	×	○	×	×	○
Cradle (Handycam Station)	×	×	×	×	○

Note: DV Interface on the Cradle (Handycam Station)

- Abbreviation
  AR : Argentine model
  AUS : Australian model
  BR : Brazilian model
  CH : Chinese model
  CND : Canadian model
  EE : East European model
  HK : Hong Kong model
  J : Japanese model
  JE : Tourist model
  KR : Korea model
  NE : North European model

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

SELF-DIAGNOSIS FUNCTION

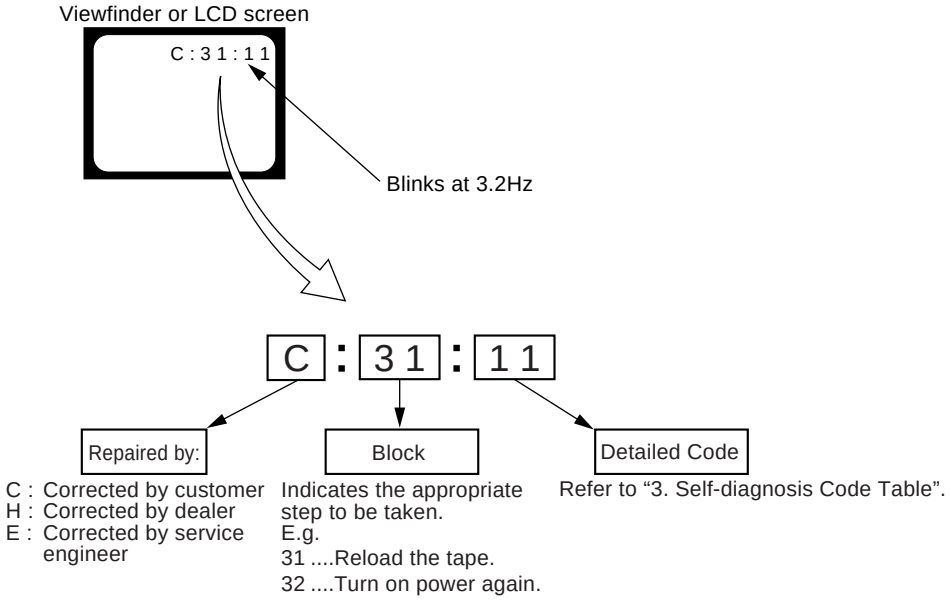
1. Self-diagnosis Function

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or LCD screen what to do. This function consists of two display; self-diagnosis display and service mode display.

Details of the self-diagnosis functions are provided in the Instruction manual.

2. Self-diagnosis Display

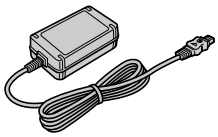
When problems occur while the unit is operating, the counter of the viewfinder or LCD screen shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the “repaired by:”, “block” in which the problem occurred, and “detailed code” of the problem.


Viewfinder or LCD screen
C : 3 1 : 1 1
Blinks at 3.2Hz
C : 31 : 11
Repaired by:
Block
Detailed Code
C : Corrected by customer
H : Corrected by dealer
E : Corrected by service engineer
Indicates the appropriate step to be taken.
E.g.
31 ....Reload the tape.
32 ....Turn on power again.
Refer to “3. Self-diagnosis Code Table”.

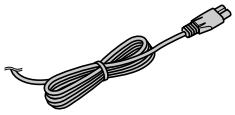
3. Self-diagnosis Code Table

Self-diagnosis Code					Symptom/State	Correction
Repaired by:	Block Function		Detailed Code			
C	0	4	0	0	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	2	1	0	0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2	2	0	0	Video head is dirty.	Clean with the optional cleaning cassette.
C	3	1	1	0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	1	1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	2	0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	1	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	2	T reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	2	3	S reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	3	0	FG fault when starting capstan.	Load the tape again, and perform operations from the beginning.
C	3	1	3	1	FG fault during normal capstan operations.	Load the tape again, and perform operations from the beginning.
C	3	1	4	0	FG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3	1	4	1	PG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3	1	4	2	FG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	1	4	3	PG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	1	4	4	Phase fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	2	1	0	LOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	1	1	UNLOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	1	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	2	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	3	S reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	0	FG fault when starting capstan.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	1	FG fault during normal capstan operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	0	FG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	1	PG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	2	FG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	3	PG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	4	Phase fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.

Checking supplied accessories.

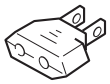


AC Adaptor
(AC-L25A/L25B)
⚠ 1-479-288-13

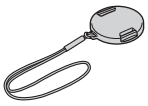


Power Cord
⚠ 1-555-074-71 (AUS)
⚠ 1-782-476-41 (CH)
⚠ 1-783-374-22 (HK)
⚠ 1-790-107-51 (US, CND)
⚠ 1-823-150-21 (AEP, EE, NE)
⚠ 1-824-910-31 (E: PAL)
⚠ 1-830-518-31 (E: NTSC)
⚠ 1-830-736-21 (UK)
⚠ 1-832-115-11 (KR)

Conversion (2P) Adaptor
⚠ 1-569-007-12 (E: NTSC)

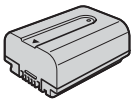


Conversion (2P) Adaptor
⚠ 1-569-008-12 (E: PAL, HK)

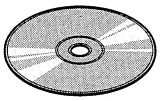


Lens Cap
X-2108-241-1

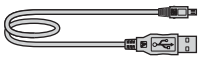
A/V Connection Cable
1-823-156-51



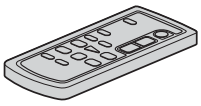
Rechargeable Battery Pack
NP-FP30
⚠ A-1082-950-A (US, CND)
⚠ A-1082-951-A
(EXCEPT US, CND)



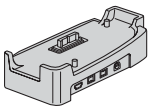
CD-ROM
"Picture Package Ver. 1.5.1"
2-666-755-01



USB Cable
1-829-868-31
(HC24E/HC35E)



Wireless Remote Commander
RMT-830
1-477-898-71
(HC24E/HC35E)



Handycam Station
(DCRA-C151)
1-819-870-11 (HC35E)

21-pin Adaptor
1-770-783-21 (HC35E)

Other accessories

2-659-811-11 MANUAL, INSTRUCTION (HC26) (ENGLISH)(US, CND, E)
2-659-811-21 MANUAL, INSTRUCTION (HC26) (FRENCH) (CND)
2-659-811-31 MANUAL, INSTRUCTION (HC26) (SPANISH) (E, AR)
2-659-811-51 MANUAL, INSTRUCTION (HC26) (TRADITIONAL CHINESE) (E)
2-659-811-61 MANUAL, INSTRUCTION (HC26) (KOREAN) (KR)

2-659-812-11 MANUAL, INSTRUCTION (HC23E/HC26E/HC35E) (ENGLISH) (AEP, UK, E, AUS, HK)
2-659-812-21 MANUAL, INSTRUCTION (HC23E/HC26E/HC35E) (FRENCH) (AEP)
2-659-812-31 MANUAL, INSTRUCTION (HC23E/HC24E/HC35E) (GERMAN) (AEP)
2-659-812-41 MANUAL, INSTRUCTION (HC23E/HC24E/HC35E) (DUTCH) (AEP)
2-659-812-51 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (SPANISH) (AEP)

2-659-812-61 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (PORTUGUESE) (AEP)
2-659-812-71 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (ITALIAN) (AEP)
2-659-812-81 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (GREEK) (AEP)
2-659-812-91 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (SWEDISH) (NE)
2-665-183-11 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (RUSSIAN) (NE)

2-665-183-21 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (DANISH) (NE)
2-665-183-31 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (FINNISH) (NE)
2-665-183-41 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (POLISH) (EE)
2-665-183-51 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (CZECH) (EE)
2-665-183-61 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (HUNGARIAN) (EE)

2-665-183-71 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (SLOVAK) (EE)
2-665-183-81 MANUAL, INSTRUCTION (HC26E) (ARABIC) (E)
2-665-183-91 MANUAL, INSTRUCTION (HC24E/HC26E/HC35E) (PERSIAN) (E)
2-665-184-11 MANUAL, INSTRUCTION (HC26E) (TRADITIONAL CHINESE) (HK)
2-665-184-21 MANUAL, INSTRUCTION (HC26E) (SIMPLIFIED CHINESE) (E)

2-665-184-31 MANUAL, INSTRUCTION (HC26E) (THAI) (E)
2-665-185-11 MANUAL, INSTRUCTION (HC26E) (SIMPLIFIED CHINESE) (CH)

• Refer to the cover for mark ⚠.

SONY

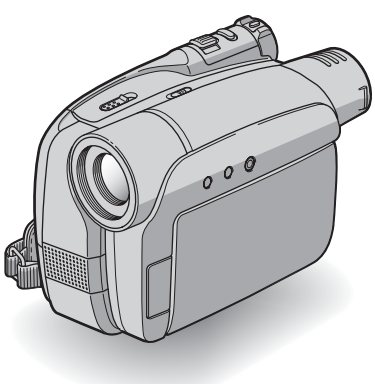
2-659-812-**11**(1)

Digital Video Camera Recorder

HANDYCAM

Operating Guide

DCR-HC23E/HC24E/ HC26E/HC35E



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Mini DV Digital Video Cassette

InfoLITHIUM P SERIES

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Read this first

Before operating the unit, please read this manual thoroughly, and retain it for future reference.

WARNING

To reduce fire or shock hazard, do not expose the unit to rain or moisture.

CAUTION

Replace the battery with the specified type only. Otherwise, fire or injury may result.

FOR CUSTOMERS IN THE UNITED KINGDOM

NOTICE ON THE SUPPLIED AC ADAPTOR

A moulded plug complying with BS1363 is fitted to this equipment for your safety and convenience.

Should the fuse in the plug supplied need to be replaced, a fuse of the same rating as the supplied one and approved by ASTA or BSI to BS 1362, (i.e., marked with ASTA or BSI mark) must be used.

If the plug supplied with this equipment has a detachable fuse cover, be sure to attach the fuse cover after you change the fuse. Never use the plug without the fuse cover. If you should lose the fuse cover, please contact your nearest Sony service station.

FOR CUSTOMERS IN EUROPE

ATTENTION

The electromagnetic fields at the specific frequencies may influence the picture and sound of this camcorder.

This product has been tested and found compliant with the limits set out in the EMC Directive for using connection cables shorter than 3 meters (9.8 feet).

Notice

If static electricity or electromagnetism causes data transfer to discontinue midway (fail), restart the application or disconnect and connect the communication cable (USB, etc.) again.

Disposal of Old Electrical & Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems)

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources.

For more detailed information about recycling of this product, please contact your local Civic Office, your household waste disposal service or the shop where you purchased the product.

Applicable Accessories: Remote Commander (DCR-HC24E/HC35E)

Notes on use

Your camcorder is supplied with two kinds of operation guides.

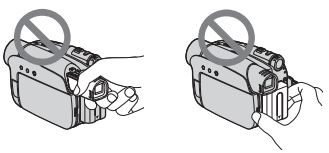
– “Operating Guide” (This manual)
– “First Step Guide” for connecting the camcorder to a computer and using the supplied software (stored on the supplied CD-ROM)

Types of cassette you can use in your camcorder

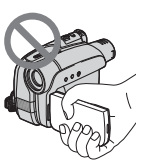
- You can use mini DV cassettes marked with Mini DV. Mini DV cassettes with Cassette Memory are incompatible (p. 83).

Using the camcorder

- Do not hold the camcorder by the following parts.



Viewfinder Battery pack

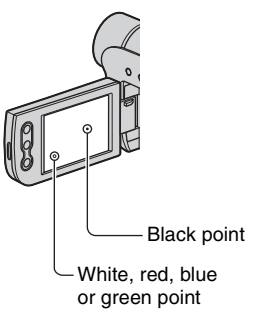


LCD panel

- The camcorder is not dustproof, dripproof or waterproof.
  See “Maintenance and precautions” (p. 87).
- Before connecting your camcorder to another device with a USB or i.LINK cable, be sure to insert the connector plug the correct way, and not forcibly to avoid damaging the terminal, or cause a malfunction of your camcorder.
- For DCR-HC35E:
  Disconnect the AC Adaptor from the Handycam Station holding both the Handycam Station and the DC plug.
- For DCR-HC35E:
  Be sure to slide the POWER switch to OFF(CHG) when you insert the camcorder into the Handycam Station or remove the camcorder from it.

About menu items, LCD panel, viewfinder, and lens

- A menu item that is grayed out is not available under the current recording or playback conditions.
- The LCD screen and the viewfinder are manufactured using extremely high-precision technology, so over 99.99% of the pixels are operational for effective use. However, there may be some tiny black points and/or bright points (white, red, blue, or green in color) that appear constantly on the LCD screen and the viewfinder. These points are normal results of the manufacturing process and do not affect the recording in any way.



- Exposing the LCD screen, the viewfinder, or the lens to direct sunlight for long periods of time may cause malfunctions.
- Do not aim at the sun. Doing so might cause your camcorder to malfunction. Take pictures of the sun only in low light conditions, such as at dusk.

On recording

- Before starting to record, test the recording function to make sure the picture and sound are recorded without any problems.

- Compensation for the contents of recordings cannot be provided, even if recording or playback is not possible due to a malfunction of the camcorder, storage media, etc.
- TV color systems differ depending on the countries/regions. To view your recordings on a TV, you need a PAL system-based TV.
- Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the copyright laws.

About this manual

- The images of the LCD screen and the viewfinder used in this manual for illustration purposes are captured using a digital still camera, and therefore may appear different.
- The on-screen displays in each local language are used for illustrating the operating procedures. Change the screen language before using your camcorder if necessary (p. 49).
- The illustrations used on this manual are based on the model DCR-HC35E. The model name is indicated on the bottom of your camcorder.
- Design and specifications of recording media and accessories are subject to change without notice.

About the Carl Zeiss lens

Your camcorder is equipped with a Carl Zeiss lens, which was developed jointly by Carl Zeiss, in Germany, and Sony Corporation, and produces superior images. It adopts the MTF* measurement system for video cameras and offers a quality typical of a Carl Zeiss lens.

* MTF stands for Modulation Transfer Function. The number value indicates the amount of light from a subject coming into the lens.

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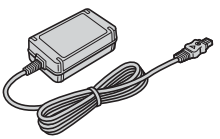
Step 1: Checking supplied items

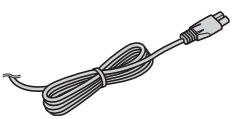
Make sure that you have following items supplied with your camcorder.
The number in the parentheses indicates the number of that item supplied.

- The cassette tape is not supplied. See page 3, 83 for compatible cassettes for your camcorder.

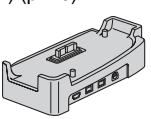
AC Adaptor (1) (p. 9)



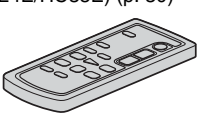
Mains lead (1) (p. 9)



Handycam Station (1)
(DCR-HC35E) (p. 10)

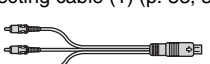


Wireless Remote Commander (1)
(DCR-HC24E/HC35E) (p. 30)



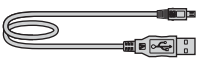
A button-type lithium battery is already installed.

A/V connecting cable (1) (p. 33, 52)

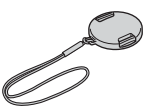


USB cable (1)
(DCR-HC24E/HC35E) (p. 57, 58)

- A USB cable is not supplied with the DCR-HC23E/HC26E models. If necessary, buy a USB 2.0 cable (Type A to Type B-mini.). A Sony product is recommended.

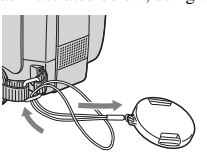


Lens cap (1) (p. 14, 22)

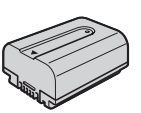


- To attach the lens cap

  Attach the lens cap to the metal fittings of the grip belt, as illustrated below, using the strap.



Rechargeable battery pack NP-FP30 (1)
(p. 9, 84)



CD-ROM “Picture Package Ver.1.5.1” (1)
(p. 58)

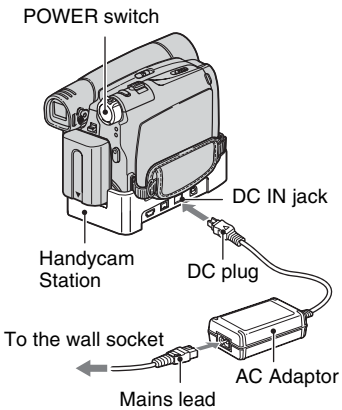
21-pin adaptor (1) (DCR-HC35E) (p. 34)
For the models with the CE mark printed on their bottom surfaces only.

Operating Guide (This manual) (1)

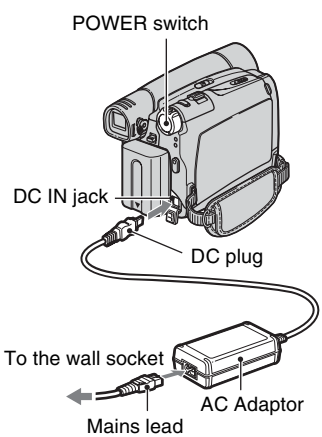
Step 2: Charging the battery pack

You can charge the "InfoLITHIUM" battery pack (P series) (p. 84) after attaching it to your camcorder.

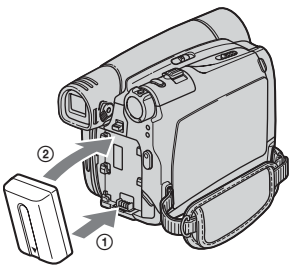
For DCR-HC35E:



For DCR-HC23E/HC24E/HC26E:



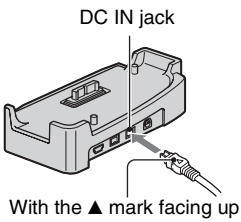
1 Align the terminals of the battery pack and your camcorder ①, then attach the battery pack and click it into place ②.



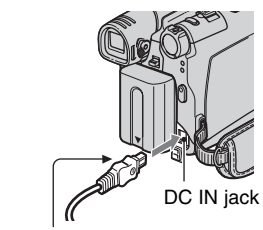
2 Slide the POWER switch in the direction of the arrow to OFF(CHG) (The default setting).

3 Connect the AC Adaptor to the DC IN jack on the Handycam Station for the DCR-HC35E or on your camcorder for the DCR-HC23E/HC24E/HC26E.

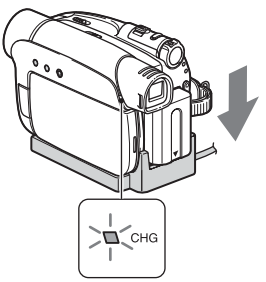
For DCR-HC35E:



For DCR-HC23E/HC24E/HC26E:



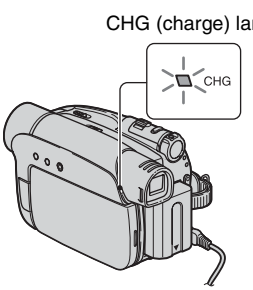
4 For DCR-HC35E:
Connect the mains lead to the AC Adaptor and the wall socket. Insert the camcorder into the Handycam Station securely, all the way to the bottom.



The CHG (charge) lamp lights up and charging starts.

- When inserting the camcorder into the Handycam Station, close the DC IN jack cover.

For DCR-HC23E/HC24E/HC26E:
Connect the mains lead to the AC Adaptor and the wall socket.



The CHG (charge) lamp lights up and charging starts.

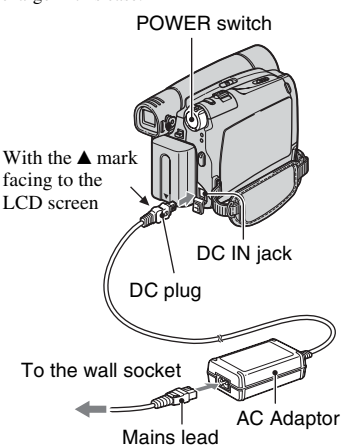
5 The CHG (charge) lamp turns off when the battery is fully charged. Disconnect the AC Adaptor from the DC IN jack.

For DCR-HC35E:
Disconnect the AC Adaptor from the DC IN jack holding both the Handycam Station and the DC plug.

For DCR-HC35E: To charge the battery pack using only the AC Adaptor

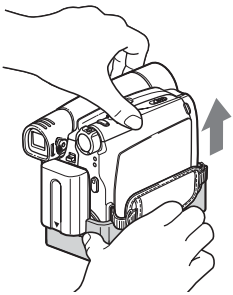
Slide the POWER switch to OFF(CHG). Then connect the AC Adaptor directly to the DC IN jack on the camcorder.

- You can operate your camcorder connected to a power source such as a wall socket as shown in the illustration. The battery pack will not lose its charge in this case.



For DCR-HC35E: To remove your camcorder from the Handycam Station

Turn off the power, then remove the camcorder from the Handycam Station holding both your camcorder and the Handycam Station.



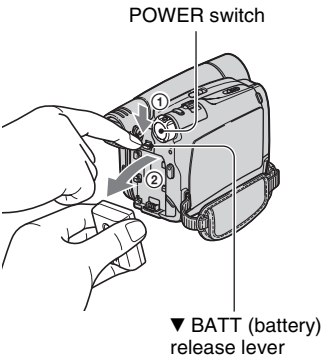
For DCR-HC23E/HC24E/HC26E: To use an outside power source

You can operate your camcorder using the power from the wall socket by making the same connections as you do when charging the battery pack. The battery pack will not lose its charge in this case.

To remove the battery pack

① Slide the POWER switch to OFF(CHG). Hold down the ▼ BATT(battery) release lever with one hand.

② Remove the battery in the direction of the arrow with the other hand.



When storing the battery pack

Fully discharge the battery before storing it for an extended period (p. 85).

Charging time

Approximate time (min.) required when you fully charge a fully discharged battery pack.

Battery pack	Charging time
NP-FP30 (supplied)	115
NP-FP50	125
NP-FP70	155
NP-FP71	170
NP-FP90	220

Recording time

Approximate time (min.) available when you use a fully charged battery pack.

Battery pack	Continuous recording time	Typical recording time*
NP-FP30 (supplied)	95	45
	110	55
NP-FP50	135	65
	160	80
NP-FP70	280	140
	330	165
NP-FP71	330	165
	395	195
NP-FP90	500	250
	580	290

- All times measured under the following conditions:
  Top: Recording with LCD screen.
  Bottom: Recording with viewfinder while the LCD panel closed.

* Typical recording time shows the time when you repeat recording start/stop, turning the power on/off and zooming.

Playing time

Approximate time (min.) available when you use a fully charged battery pack.

Battery pack	LCD panel opened	LCD panel closed
NP-FP30 (supplied)	105	135
NP-FP50	150	190
NP-FP70	310	395
NP-FP71	370	465
NP-FP90	550	705

On the battery pack

- Before changing the battery pack, slide the POWER switch to OFF(CHG).
- The CHG (charge) lamp flashes during charging, or the Battery Info (p. 25) will not be correctly displayed under the following conditions.
  - The battery pack is not attached correctly.
  - The battery pack is damaged.
  - The battery pack is worn-out. (For Battery Info only.)
- The power will not be supplied from the battery as long as the AC Adaptor is connected to the DC IN jack of your camcorder or the Handycam Station supplied with the DCR-HC35E, even when the mains lead is disconnected from the wall socket.

On the charging/recording/playback time

- Times measured with the camcorder at 25 °C (77 °F). (10 to 30 °C (50 °F to 86 °F) is recommended.)
- The recording and playback time will be shorter when you use your camcorder in low temperatures.
- The recording and playback time will be shorter depending on the conditions under which you use your camcorder.

On the AC Adaptor

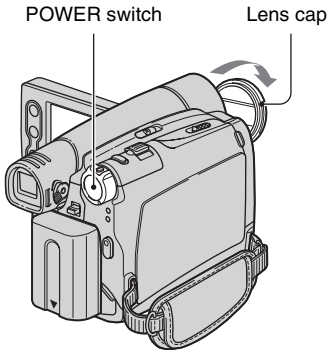
- Use the nearby wall socket when using the AC Adaptor. Disconnect the AC Adaptor from the wall socket immediately if any malfunction occurs while using your camcorder.
- Do not use the AC Adaptor placed in a narrow space, such as between a wall and furniture.
- Do not short-circuit the DC plug of the AC Adaptor or battery terminal with any metallic objects. This may cause a malfunction.

PRECAUTION

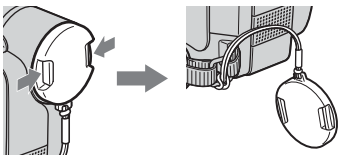
- Even if your camcorder is turned off, AC power (mains) is still supplied to it while connected to the wall socket via the AC Adaptor.

Step 3: Turning the power on and holding your camcorder firmly

To record or play back, slide the POWER switch repeatedly to turn on the respective lamp.
When using it for the first time, the [CLOCK SET] screen appears (p. 18).

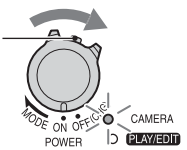


1 Remove the lens cap by pressing both knobs on the sides of the cap.



2 Slide the POWER switch repeatedly in the direction of the arrow to turn on the respective lamp.

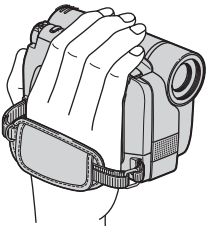
If the POWER switch is set to OFF(CHG), slide it while pressing the green button.



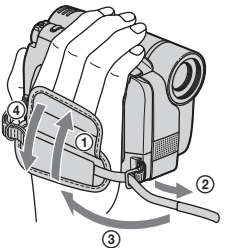
Lamps that light up
CAMERA: To record on a tape.
PLAY/EDIT: To play or edit pictures.

- After you have set the date and time ([CLOCK SET], p. 18), the next time you turn on the power of your camcorder, the current date and time will be displayed on the LCD screen for a few seconds.

3 Hold the camcorder correctly.



4 Ensure a good grip, then fasten the grip belt.



To turn off the power

① Slide the POWER switch to OFF(CHG).

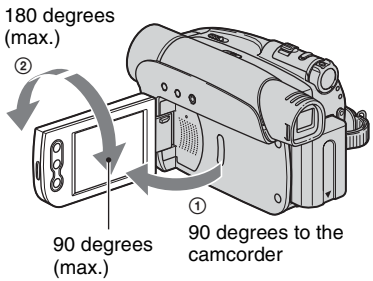
② Attach the lens cap.

- At the time of purchase, the power will be set to turn off automatically if you leave your camcorder without any operation attempted for approximately 5 minutes, to save battery power ([A.SHUT OFF], p. 50).

Step 4: Adjusting the LCD panel and viewfinder

The LCD panel

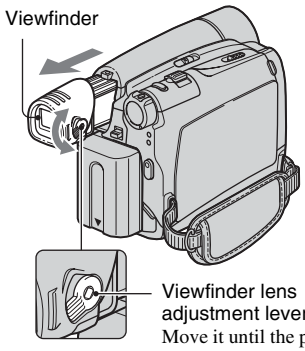
Open the LCD panel 90 degrees to the camcorder (①), then rotate it to the best angle to record or play (②).



- Do not press the buttons on the LCD frame accidentally when you open or adjust the LCD panel.
- If you rotate the LCD panel 180 degrees to the lens side, you can close the LCD panel with the LCD screen facing out. This is convenient during playback operations.
- See [LCD BRT] (p. 41) to adjust the brightness of the LCD screen.

The viewfinder

You can view pictures using the viewfinder to avoid wearing down the battery, or when the picture seen on the LCD screen is poor.

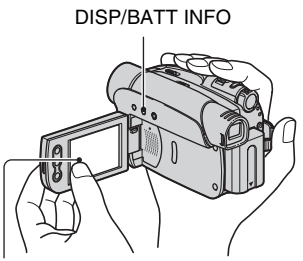


- You can adjust the brightness of the viewfinder backlight by selecting (LCD/VF SET) - [VF B.L.] (p. 47).
- You can adjust the [FADER] and the [EXPOSURE] setting using the viewfinder (p. 39).

Step 5: Using the touch panel

You can play back recorded pictures (p. 23), or change the settings (p. 36) using the touch panel.

Place your hand on the rear side of the LCD panel to support it. Then, touch the buttons displayed on the screen.



Touch the button on the LCD screen.

- Perform the same actions as explained above when you press the buttons on the LCD frame.
- Be careful not to press buttons on the LCD frame accidentally while using the touch panel.
- If the buttons on the touch panel do not work correctly, adjust the LCD screen (CALIBRATION) (p. 88).
- Dots in lines may appear on the LCD screen, but this is not a malfunction. These dots are not recorded.

To hide the screen indicators

Press DISP/BATT INFO to toggle the screen indicators (such as time code) on or off.

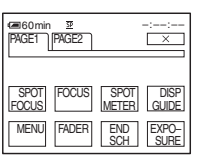
Changing the language setting

You can change the on-screen displays to show messages in a specified language. Select the screen language in [LANGUAGE] on the (SETUP MENU) (p. 36, 49).

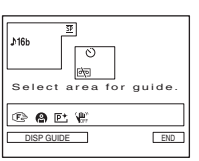
Checking the screen indicators (Display guide)

You can easily check the meaning of each indicator (p. 27) that appears on the LCD screen.

1 Touch FN .

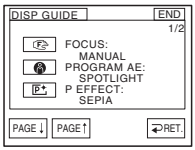


2 Touch [DISP GUIDE].



The indicators vary depending on the settings.

3 Touch the area including the indicator that you want to check.



The meanings of the indicators in the area are listed on the screen. If you cannot find the indicator you want to check, touch [PAGE ↓]/[PAGE ↑] to toggle.

When you touch [RET.], the screen returns to the area selecting display.

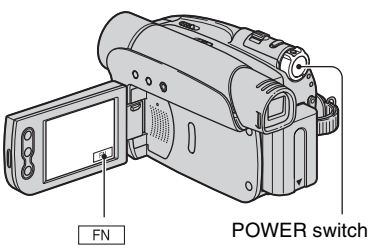
To finish the operation

Touch [END].

Step 6: Setting the date and time

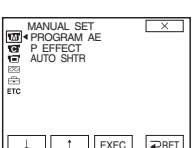
Set the date and time when using this camcorder for the first time. If you do not set the date and time, the [CLOCK SET] screen appears every time you turn on your camcorder or change the POWER switch position.

- If you do not use your camcorder for **about 3 months**, the built-in rechargeable battery gets discharged and the date and time settings may be cleared from the memory. In that case, charge the rechargeable battery and then set the date and time again (p. 89).

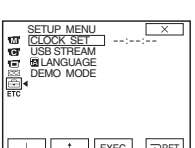


Skip to step **4** when you set the clock for the first time.

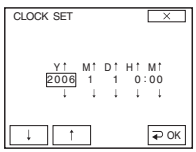
1 **Touch FN → [MENU].**



2 **Select (SETUP MENU) with ↓ / ↑, then touch [EXEC].**

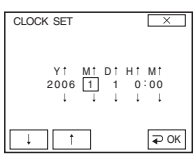


3 **Select [CLOCK SET] with ↓ / ↑, then touch [EXEC].**



4 **Set [Y] (year) with ↓ / ↑, then touch OK.**

You can set any year up to the year 2079.



5 **Set [M] (month), [D] (day), [H] (hour) and [M] (minute), then touch OK.**

The clock starts.

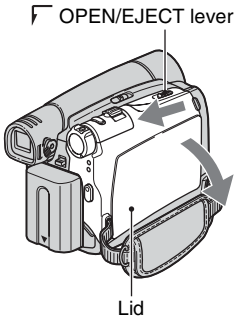
- The date and time are not displayed while recording, but they are automatically recorded as the date and time data to display while playing back by selecting [DATA CODE] to [DATE/TIME] (p. 41).

Step 7: Inserting a Cassette

You can use mini DV Mini DV cassettes only (p. 83).

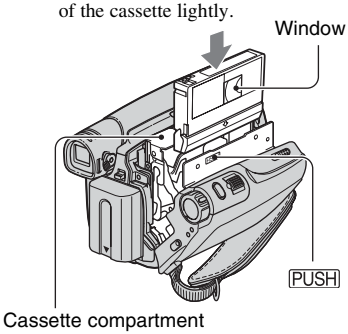
- The recordable time varies depending on [REC MODE] (p. 48).

1 Slide and hold the ⌐ OPEN/EJECT lever in the direction of the arrow and open the lid.



The cassette compartment automatically comes out and opens up.

2 Insert a cassette with its window facing outwards, then press PUSH.



The cassette compartment automatically slides back in.

- **Do not force the cassette compartment closed by pressing the portion marked DO NOT PUSH while it is sliding in. It may cause a malfunction.**

3 Close the lid.

To eject the cassette

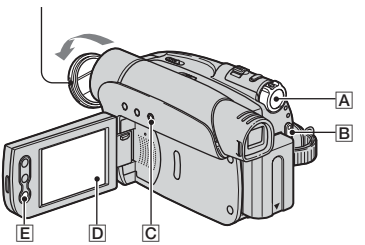
Open the lid following the same procedure as described in Step **1** and remove the cassette.

- For DCR-HC35E:
  Do not insert/eject the cassette while your camcorder is on the Handycam Station. This may cause a malfunction.

Easy Recording/Playback (Easy Handycam)

With this Easy Handycam operation, most of the camera settings are automatically optimally adjusted, which frees you from detailed adjustments. The screen font size increases for easy viewing.

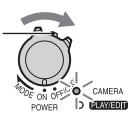
Remove the lens cap (p. 14).



Recording

1 Slide the POWER switch A in the direction of the arrow repeatedly to turn on the CAMERA lamp.

If the POWER switch A is set to OFF(CHG), slide it while pressing the green button.



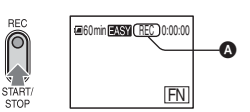
2 Press EASY C.

EASY

EASY appears on the screen D.

3 Press REC START/STOP B to start recording.*

The indicator (A) changes [STBY] to [REC]. To stop recording, press B again.

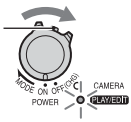


* Movies are recorded in SP (Standard Play) mode on a cassette. You can also start/stop recording by pressing the button E on the LCD frame.

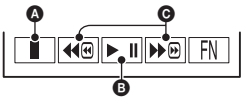
Playback

Slide the POWER switch A in the direction of the arrow repeatedly to turn on the PLAY/EDIT lamp. Touch the buttons on the screen D as follows.

If the POWER switch is set to OFF(CHG), slide it while pressing the green button.



Touch ◄◄, then touch ►II to start playback.



A Stop
B Play/Pause toggles as you touch it
C Rewind/Fast forward

■ To cancel Easy Handycam operation

Press EASY C again. EASY disappears from the screen D.

■ Adjustable menu settings during Easy Handycam operation

Touch FN and [MENU] to display adjustable menu settings. See page 36 for details on setting.

- Almost all the settings return to the default setting automatically (p. 43).
- Cancel Easy Handycam operation if you want to add any effects or settings to the images. Almost all the settings are returned to the previous situation.

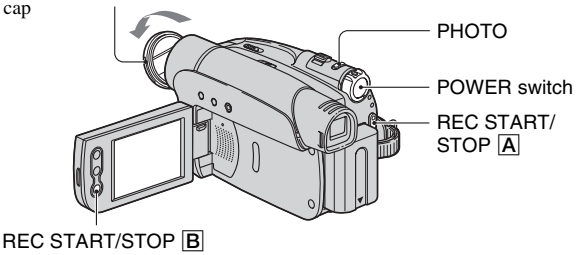
■ Unavailable buttons during Easy Handycam

During Easy Handycam operation, the following buttons are unavailable, since the items are set automatically. [Invalid during Easy Handycam operation.] appears if operations not available during Easy Handycam are attempted.

- BACK LIGHT button (p. 24)
- PHOTO button (p. 22)

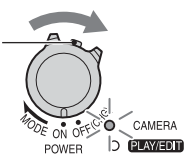
Recording

Lens cap
Remove the lens cap by pressing both knobs on the sides of the cap



1 Slide the POWER switch in the direction of the arrow repeatedly to turn on the CAMERA lamp.

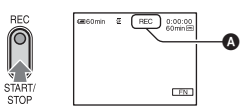
If the POWER switch is set to OFF(CHG), slide it while pressing the green button.



2 Start recording.

Movies

Press REC START/STOP A (or B).

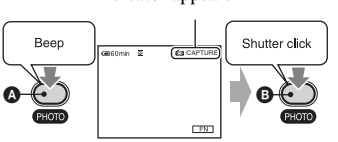


The indicator (A) changes [STBY] to [REC].

Still images

Press and hold PHOTO lightly to check the image (A), then press it fully (B).

Indicator appears



A shutter sound is heard, and the image is recorded with sound for 7 seconds.

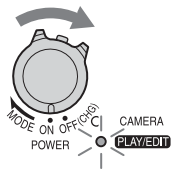
To stop movie recording

Press REC START/STOP again.

- appears when the tape photo recording does not work.

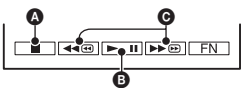
Playback

1 Slide the POWER switch in the direction of the arrow repeatedly to turn on the PLAY/EDIT lamp.



2 Start playing back.

Touch ◄◄ to rewind the tape to the desired point, then touch ►II to start playback.



A Stop

B Play/Pause toggles as you touch it

- Playback automatically stops if pause is engaged for more than 3 minutes.

C Rewind/Fast forward

To adjust the volume

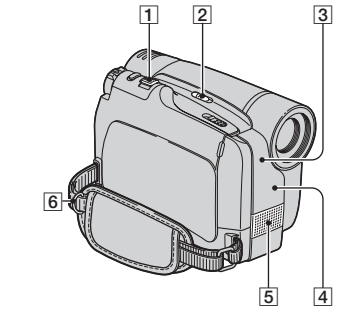
Touch FN → [PAGE1] → [VOL], then − / + to adjust the volume.

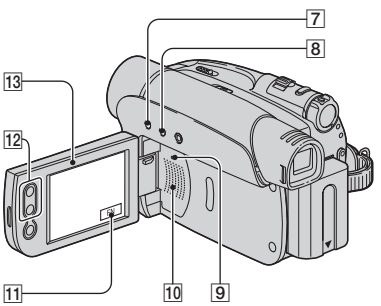
To search for a scene during playback

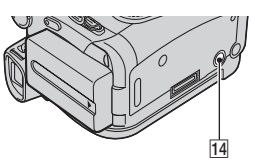
Touch and hold ►►/◄◄ during playback (Picture Search), or ►►/◄◄ while fast forwarding or rewinding the tape (Skip Scan).

- You can play back in various modes ([V SPD PLAY], p. 42).

Functions used for recording/playback, etc.





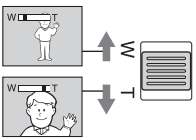


Recording

To use zoom 1 12

Move the power zoom lever 1 slightly for a slower zoom. Move it further for a faster zoom.

Wider range of view: (Wide angle)



Close view: (Telephoto)

- You cannot change the zoom speed with the zoom buttons 12 on the LCD frame.
- The minimum possible distance between camcorder and subject while maintaining sharp focus is about 1 cm (about 13/32 in.) for wide angle and about 80 cm (about 2 5/8 feet) for telephoto.
- You can set [D ZOOM] (p. 45) if you want to zoom to a level greater than 20 ×.
- Be sure to keep your finger on the power zoom lever. If you move your finger off the power zoom lever, the operation sound of the power zoom lever may also be recorded.

To record in dark places (NightShot plus) 2

Set the NIGHTSHOT PLUS switch 2 to ON. (and ["NIGHTSHOT PLUS"] appear.)

- The NightShot plus function uses infrared light. Therefore, do not cover the infrared port 3 with your fingers or other objects. Remove the conversion lens (optional) if it is attached.
- Adjust the focus manually ([FOCUS], p. 38) when it is hard to focus automatically.
- Do not use these functions in bright places. This may cause a malfunction.

To adjust the exposure for backlit subjects (BACK LIGHT) 7

To adjust the exposure for backlit subjects, press BACK LIGHT 7 to display . To cancel the back light function, press BACK LIGHT again.

To adjust the focus for an off center subject (SPOT FOCUS) 11

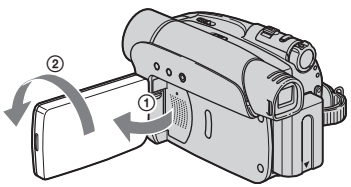
See [SPOT FOCUS] on page 38.

To fix the exposure for the selected subject (Flexible spot meter)..... 11

See [SPOT METER] on page 38.

To record in mirror mode 13

Open the LCD panel 13 90 degrees to the camcorder (①), then rotate it 180 degrees to the lens side (②).



- A mirror-image of the subject appears on the LCD screen, but the picture will be normal when recorded.

To use a tripod..... 14

Attach the tripod (optional: the length of the screw must be less than 5.5 mm (7/32 in.)) to the tripod receptacle 14 using a tripod screw.

To use a Shoulder Belt 6

Attach the Shoulder Belt (optional) to its designated hook 6.

Playback

To play back the images with added special effects (Picture effect) 11

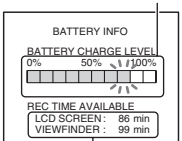
See [P EFFECT] on page 44.

Recording/playback

To check the remaining battery (Battery Info) 8

Set the POWER switch to OFF(CHG), then press DISP/BATT INFO 8. The battery information appears for about 7 seconds. You can view the battery information for up to 20 seconds by pressing DISP/BATT INFO again while the battery information is displayed.

Remaining battery (approx.)



Recording capacity (approx.)

To turn off the operation confirmation beep (BEEP) 11

See [BEEP] on page 50.

To initialize the settings (RESET)..... 9

Press RESET 9 to initialize all the settings, including the setting of the date and time.

Other part names and functions

4 Remote sensor (DCR-HC24E/HC35E)
Point the Remote Commander (p. 30) towards the remote sensor to operate your camcorder.

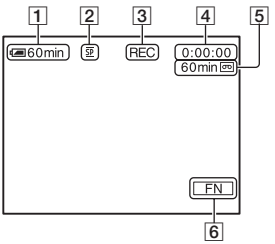
5 Internal stereo microphone

10 Speaker
Playback sound comes out from the speaker.

- For how to adjust the volume, see page 23.

Indicators displayed during recording/playback

Recording



1 Remaining battery (approx.)

2 Recording mode (SP or LP) (48)

3 Recording status ([STBY] (standby) or [REC] (recording))

4 Recording: Tape counter (hour: minute: second)/Tape photo recording (22)
Playback: Tape counter (hour: minute: second)/Time code (hour: minute: second: frame)

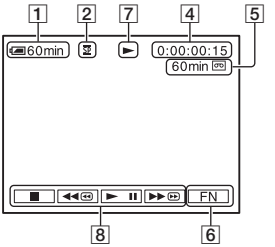
5 Recording capacity of the tape (approx.) (49)

6 Function button (36)

Data code during recording

The date/time during recording and the camera setting data will be recorded automatically. They do not appear on the screen during recording, but you can check them as [DATA CODE] during playback (p. 41).

Viewing



7 Tape transport indicator

8 Video operation buttons (23)

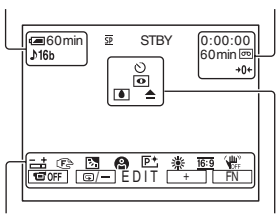
( ) is a reference page.
The indicators during recording will not be recorded.

Indicators when you made changes

You can use [DISP GUIDE] (p. 16) to check the function of each indicator that appears on the LCD screen.

- Some of the indicators may not appear when you use [DISP GUIDE].

Upper left Upper right



Bottom Center

Upper left

Indicator	Meaning
16b	AUDIO MODE (48)

Upper right

Indicator	Meaning
DV IN	DV input (54)
+0+	Zero set memory (30)

Center

Indicator	Meaning
	Self-timer recording (41)
	NightShot plus (24)
	Warning (80)

Bottom

Indicator	Meaning
	Flexible spot meter (38)/ Manual exposure (40)
	Manual focus (38)
	Backlight (24)
	PROGRAM AE (44)
	Picture effect (44)
	White balance (40)
16:9	Wide select (46)
	SteadyShot off (46)
OFF	Panel off (39)
EDIT	EDITSEARCH (46)

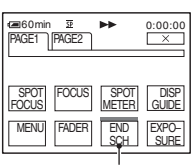
Searching for the starting point

Make sure that the CAMERA lamp lights up (p. 22).

Searching for the last scene of the most recent recording (END SEARCH)

[END SCH] (END SEARCH) will not work once you eject the cassette after you have recorded on the tape.

Touch FN → [PAGE1], then touch [END SCH].



Touch here again to cancel the operation.

The last scene of the most recent recording is played back for about 5 seconds, and the camcorder enters the standby mode at the point where the last recording has finished.

- [END SCH] will not work correctly when there is a blank section between recorded sections on the tape.
- This operation is also available when the POWER switch is set to PLAY/EDIT.

Searching manually (EDIT SEARCH)

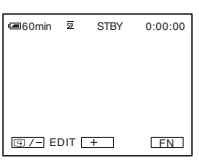
You can search for the start point to start the next recording while viewing the pictures on the screen. The sound is not played back during the search.

1 Touch FN → [PAGE1] → [MENU].

2 Select (CAMERA SET) with ↓ / ↑, then touch [EXEC].

3 Select [EDITSEARCH] with ↓ / ↑, then touch [EXEC].

4 Select [ON] with ↓ / ↑, then touch [EXEC] → ×.



5 Touch and hold / (to go backward)/ + (to go forward) and release it at the point where you want the recording to start.

Reviewing the most recently recorded scenes (Rec review)

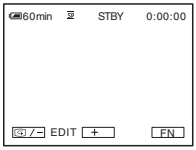
You can view a few seconds of the scene recorded just before you stopped the tape.

1 **Touch FN → [PAGE1] → [MENU].**

2 **Select (CAMERA SET) with ↓ / ↑, then touch [EXEC].**

3 **Select [EDITSEARCH] with ↓ / ↑, then touch [EXEC].**

4 **Select [ON] with ↓ / ↑, then touch [EXEC] → ×.**

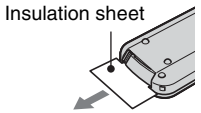


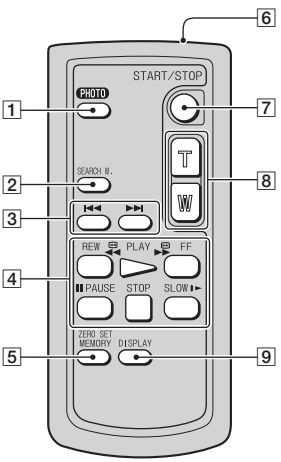
5 **Touch ⏮/−.**

The last few seconds of the most recently recorded scene are played back. Then, your camcorder is set to the standby.

Remote Commander (DCR-HC24E/HC35E)

Remove the insulation sheet before using the Remote Commander.





1 PHOTO* (p. 22)
The on-screen image when you press this button will be recorded as a still image.

2 SEARCH M.* (p. 31)

3 I◄◄ ►►I*

4 Video control buttons (Rewind, Playback, Fast-forward, Pause, Stop, Slow) (p. 23)

5 ZERO SET MEMORY*

6 Transmitter

7 REC START/STOP (p. 20, 22)

8 Power zoom (p. 24)

9 DISPLAY (p. 16)
Press this button to hide the screen indicators.

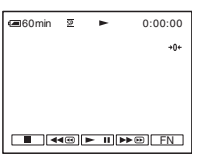
* These buttons are not available during Easy Handycam operation.

- Aim the Remote Commander towards the remote sensor to operate your camcorder (p. 25).
- To change the battery, see page 89.

Searching quickly for a desired scene (Zero set memory)

1 During playback, press ZERO SET MEMORY 5 at a point you want to locate later on.

The tape counter is reset to “0:00:00” and →0← appears on the screen.



If the tape counter is not displayed, press DISPLAY 9.

2 Press STOP 4 when you want to stop playback.

3 Press ◄◄REW 4.

The tape stops automatically when the tape counter reaches “0:00:00.”

4 Press PLAY 4.

Playback starts from the point designated “0:00:00” on the tape counter.

To cancel the operation

Press ZERO SET MEMORY 5 again.

- There may be a discrepancy of several seconds between the time code and the tape counter.

• Zero set memory will not function correctly if there is a blank section between recorded sections on the tape.

Searching for a scene by date of recording (Date search)

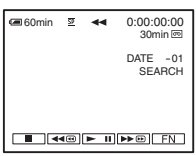
You can locate the point where the recording date changes.

1 Slide the POWER switch repeatedly to turn on the PLAY/EDIT lamp.

2 Press SEARCH M. [2] to select [DATE SEARCH].

3 Press I◄◄ (previous)/►►I(next) [3] to select a recording date.

Each time you press I◄◄ or ►►I, your camcorder searches for the previous or next date from the current point on the tape.



To cancel the operation

Press STOP [4].

• The Date search will not function correctly when there is a blank section between recorded sections on the tape.

Searching for a still image (Photo search)

Your camcorder can search for the still image automatically, regardless of the recording date.

1 Slide the POWER switch repeatedly to turn on the PLAY/EDIT lamp.

2 Press SEARCH M. [2] to select [PHOTO SEARCH].

3 Press I◄◄ (previous)/►►I(next) [3] to select a photo.

Each time you press I◄◄ or ►►I, your camcorder searches for the still image before or after the current point on the tape.

To cancel the operation

Press STOP [4].

• The Photo search will not function correctly if there is a blank section between recorded sections on the tape.

Playing back still images in sequence (Photo scan)

You can locate still images one after another and display each image for 5 seconds automatically.

1 Slide the POWER switch repeatedly to turn on the PLAY/EDIT lamp.

2 Press SEARCH M. 2 to select [PHOTO SCAN].

3 Press I◄◄ (previous)/►►I (next) 3.

To cancel the operation

Press STOP 4.

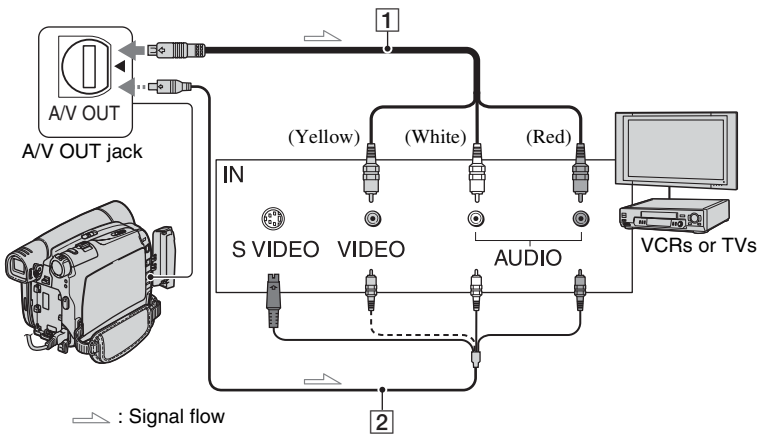
- The Photo scan will not function correctly if there is a blank section between recorded sections on the tape.

Playing the picture on a TV

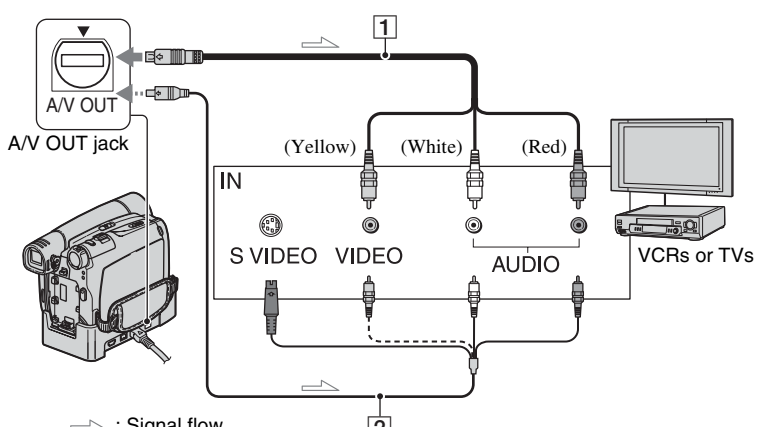
You can connect your camcorder to the input jack of a TV or a VCR using the A/V connecting cable (1) or the A/V connecting cable with S VIDEO (2). Connect your camcorder to the wall socket using the supplied AC Adaptor for this operation (p. 9). Refer also to the instruction manuals supplied with the devices to be connected.

- For DCR-HC35E:
  Do not insert/eject the cassette while your camcorder is on the Handycam Station. This may cause a malfunction.

DCR-HC23E/HC24E/HC26E:



DCR-HC35E:



1 A/V connecting cable (supplied)
For DCR-HC35E:
The Handycam Station and your camcorder are both equipped with A/V OUT jacks (p. 57). Connect the A/V connecting cable either to the Handycam Station or to your camcorder, depending on your setup.

2 A/V connecting cable with S VIDEO (optional)
When connecting to another device via the S VIDEO jack, by using the A/V connecting cable with an S VIDEO cable, pictures can be reproduced more faithfully than with the supplied A/V cable connection.

Connect the white and red plugs (left/right audio) and S VIDEO plug (S VIDEO channel) of an A/V connecting cable. In this case, the yellow (standard video) plug connection is not necessary. S VIDEO connection only will not output audio.

- You can display the time code on the TV screen by setting [DISP OUT] to [V-OUT/LCD] (p. 50).
- For DCR-HC35E:
  Do not connect A/V connecting cable to both the Handycam Station and your camcorder at the same time, as image disturbance may occur.

When connecting your camcorder to a TV through a VCR

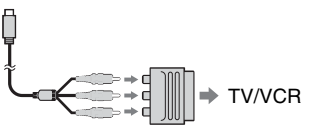
Connect your camcorder to the LINE IN input on the VCR. Set the input selector on the VCR to LINE (VIDEO 1, VIDEO 2, etc.), if the VCR has an input selector.

When your TV is monaural (Only one audio input jack)

Connect the yellow plug of the A/V connecting cable to the video input jack and connect the white (left channel) or the red (right channel) plug to the audio input jack of your TV or VCR.

If your TV/VCR has a 21-pin adaptor (EUROCONNECTOR)

You need the 21-pin adaptor to connect your camcorder to a TV for viewing recorded images. This adaptor is designed for output use only. This output only adaptor is supplied with the DCR-HC35E model with the CE label on the bottom panel but not with DCR-HC23E/HC24E/HC26E models.



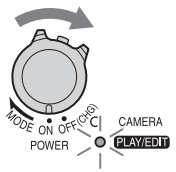
Using the menu items

Follow the instructions below to use each of the menu items listed after this page.

1 Slide the POWER switch in the direction of the arrow repeatedly to turn on the respective lamp.

CAMERA lamp: settings for recording on a tape

PLAY/EDIT lamp: settings for viewing/editing



2 Touch the LCD screen to select the menu item.

Unavailable items will be grayed out.

■ To use the operation buttons on PAGE1/PAGE2/PAGE3 during normal operation

For details of the button items, see page 38.

① Touch [FN] .

② Touch the desired page.

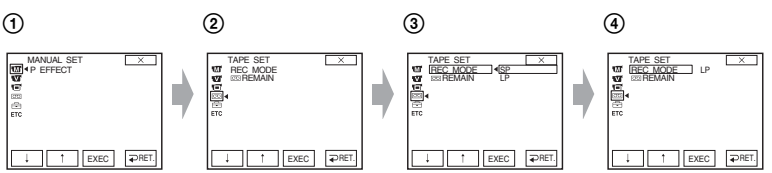
③ Touch the desired button.

④ Select the desired setting, then touch [OK] → [×] (Close).

•With some settings, you do not have to touch [OK] .

■ To use menu items

For details of the items, see page 44.



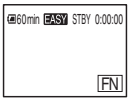
① Touch [FN] → [MENU] on [PAGE1].
The menu index screen appears.

② Select the desired menu.
Touch [↓] / [↑] to select the item, then touch [EXEC]. (The process in step ③ and ④ is the same as that in step ②.)

③ Select the desired item.

④ Customize the item.
After finishing the settings, touch [×] (close) to hide the menu screen.
Each touch of [↩ RET.] takes you to the previous screen.

■ To use menu items during Easy Handycam operation



① Touch FN .
② Select the desired menu.
Touch [MENU] then select the desired menu.
③ Change your item setting.
After finishing the settings, touch × (close) to hide the menu screen.
Each touch of [RET.] takes you to the previous screen.
•Cancel Easy Handycam operation to use menu items normally.

Operation button items

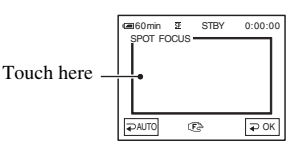
Available operation buttons vary depending on the position of the lamp and the display (PAGE).
The default settings are marked with ▶.
The indicators in parentheses appear when the items are selected.
The available functions during Easy Handycam operation are marked with*.
See page 36 for details on selecting button items.

When the CAMERA lamp lights up

[PAGE1]

SPOT FOCUS

You can select and adjust the focal point to aim it at a subject not located in the center of the screen.



Touch the point where you want to focus on in the frame.
appears.

To adjust the focus automatically, touch [AUTO] or set [FOCUS] to [AUTO].

- If you set [SPOT FOCUS], [FOCUS] is automatically set to [MANUAL].
- The setting returns to [AUTO] when you turn the power off for more than 12 hours.

FOCUS

You can adjust the focus manually. You can select this function also when you want to focus on a certain subject intentionally.

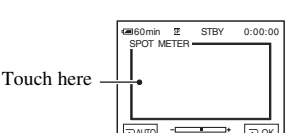
① Touch [MANUAL].
appears.
② Touch (focusing on close subjects)/ (focusing on distant subjects) to sharpen the focus. appears when the focus cannot be adjusted any closer, and appears when the focus cannot be adjusted farther away.

To adjust the focus automatically, touch [AUTO] in step ①.

- It is easier to focus on the subject by moving the power zoom lever towards T (telephoto) to adjust the focus, then towards W (wide angle) to adjust the zoom for recording. When you want to record a subject at close range, move the power zoom lever to W (wide angle), then adjust the focus.
- The minimum possible distance between camcorder and subject while maintaining sharp focus is about 1 cm (about 13/32 in.) for wide angle and about 80 cm (about 2 5/8 feet) for telephoto.
- The setting returns to [AUTO] when you turn the power off for more than 12 hours.

SPOT METER (Flexible spot meter)

You can adjust and fix the exposure to the subject, so that it is recorded in suitable brightness even when there is strong contrast between the subject and the background, such as subjects in the spotlight on stage.



Touch the point where you want to fix and adjust the exposure on the screen.
appears.

To return the setting to automatic exposure, touch [↩ AUTO] or set [EXPOSURE] to [↩ AUTO].

- If you set [SPOT METER], [EXPOSURE] is automatically set to [MANUAL].
- The setting returns to [↩ AUTO] when you turn the power off for more than 12 hours.

DISP GUIDE (Display Guide)*

See page 16.

MENU*

See page 43.

FADER

You can add the following effects to currently recording pictures.

① Select the desired effect in standby mode (to fade in) or recording mode (to fade out), then touch [↩OK] → [×].
② Press REC START/STOP.
The fader indicator stops flashing and disappears when the fade is complete.

To cancel [FADER] before starting the operation, touch [↩ OFF] in step ①.

- If you press REC START/STOP once, the setting is canceled.

Fading out Fading in

WHITE

BLACK

MOSC. FADER

MONOTONE

When fading in, the picture gradually changes from black and white to color. When fading out, it gradually changes from color to black and white.

Using the viewfinder

You can adjust [EXPOSURE] and [FADER] while using the viewfinder by having the LCD panel rotated 180 degrees and closed with the screen facing out.

1 Make sure that the CAMERA lamp lights up.
2 Close the LCD panel with the screen facing out.
[OFF] appears.
3 Touch [OFF].
4 Touch [OK].
The LCD screen is turned off.
5 Touch the LCD screen while checking the display in the viewfinder.
[EXPOSURE], etc. are displayed.
6 Touch the button you want to set.
[EXPOSURE]: Adjust with [−]/[+], and touch [↩OK].
[FADER]: Touch it repeatedly to select a desired effect.
[ON]: The LCD screen lights up.

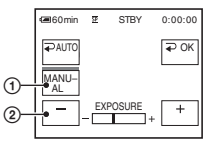
To hide the buttons, touch [↩OK].

END SCH (END SEARCH)

See page 28.

EXPOSURE

You can fix the brightness of a picture manually. When recording indoors on a clear day, for instance, you can avoid backlight shadows on people next to the window by fixing the exposure to that of the wall side of the room.



① Touch [MANUAL].

appears.

② Adjust the exposure by touching [−]/[+].

To return the setting to automatic exposure, touch [↩ AUTO].

- You can adjust [EXPOSURE] and [FADER] while using the viewfinder by having the LCD panel rotated 180 degrees and closed with the screen facing out (p. 39).
- The setting returns to [↩ AUTO] when you turn the power off for more than 12 hours.

[PAGE2]

WHT BAL (White balance)

You can adjust the color balance to the brightness of the recording environment.

▶ ↩ AUTO

The white balance is adjusted automatically.

OUTDOOR (☀)

The white balance is adjusted to be appropriate for the following recording conditions:

– Outdoors
– Night views, neon signs and fireworks
– Sunrise or sunset
– Under daylight fluorescent lamps

INDOOR (☼)

The white balance is adjusted to be appropriate for the following recording conditions:

– Indoors
– At party scenes or studios where the lighting conditions change quickly
– Under video lamps in a studio, or under sodium lamps or incandescent-like color lamps

ONE PUSH (▙)

The white balance will be adjusted according to the ambient light.

① Touch [ONE PUSH].

② Frame a white object such as a piece of paper, to fill the screen under the same lighting conditions as you will shoot the subject.

③ Touch [▙].

▙ flashes quickly. When the white balance has been adjusted and stored in the memory, the indicator stops flashing.

- Do not shake your camcorder while ▙ is flashing quickly.
- ▙ flashes slowly if white balance could not be set.
- If ▙ keeps flashing even after you have touched [↩OK], set [WHT BAL] to [↩ AUTO].

- If you have changed the battery pack while [↩ AUTO] is selected, taken your camcorder outdoors or brought it indoors after outside use while using fixed exposure, select [↩ AUTO] and aim your camcorder at a nearby white object for about 10 seconds for better color balance adjustment.
- Redo the [ONE PUSH] procedure if you change the [PROGRAM AE] settings, or bring your camcorder outdoors from inside the house, or vice versa.
- Set [WHT BAL] to [↩ AUTO] or [ONE PUSH] under white or cool white fluorescent lamps.
- The setting returns to [↩ AUTO] when you turn the power off for more than 12 hours.

SELF TIMER

The self-timer starts recording after about 10 seconds.

① Touch [FN] → [PAGE2] → [SELF TIMER].
⏲ appears.
② Touch [×].
③ Press REC START/STOP to record movies, or PHOTO to record still images.

To cancel the count down during recording movies, press REC START/STOP.

To cancel [SELF TIMER], redo step ①.

- For DCR-HC24E/HC35E:
  You can also set the self-timer with the REC START/STOP button or PHOTO button of the Remote Commander (p. 30).

LCD BRT (LCD bright)

You can adjust the brightness of the LCD screen. The recorded picture will not be affected by this operation.

Adjust the brightness with [−]/[+].

When the PLAY/EDIT lamp lights up

You can use the video operation buttons ([■]/[◀◀]/[▶ II]/[▶▶]) on every PAGE.

[PAGE1]

MENU*

See page 43.

VOL* (Volume)

See page 23.

END SCH (END SEARCH)

See page 28.

DISP GUIDE (Display Guide)*

See page 16.

[PAGE2]

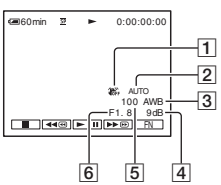
DATA CODE*

During playback, displays information (data code) recorded automatically at the time of recording.

▶ OFF
Data code is not displayed.

DATE/TIME
Displays the date and time.

CAM DATA (below)
Displays camera setting data.



1 SteadyShot off
2 Exposure
3 White balance
4 Gain
5 Shutter speed
6 Aperture value

- In the [DATE/TIME] data display, the date and time are displayed in the same area. If you record a picture without setting the clock, [-- -- ----] and [--:--:--] will appear.
- During Easy Handycam operation, you can set [DATE/TIME] only.

LCD BRT (LCD bright)

You can adjust the brightness of the LCD screen. The recorded picture will not be affected by this operation.

Adjust the brightness with [−]/[+].

BURN DVD

When your camcorder is connected to a Sony VAIO series personal computer, you can easily burn the picture recorded on the tape on a DVD (Direct Access to "Click to DVD") (p. 65).

BURN VCD

When your camcorder is connected to a personal computer, you can easily burn the picture recorded on the tape on a CD-R (Direct Access to Video CD Burn). See "First Step Guide" in the supplied CD-ROM for details (p. 64).

[PAGE3]

V SPD PLAY (Various speed playback)

You can play back in various modes while viewing movies.

① Touch the following buttons during playback.

To	Touch
change the playback direction*	◄II< (frame)
play back slowly**	[►SLOW] To reverse direction: ◄II< (frame) → [►SLOW]
play back 2 times faster (double speed)	×2 (double speed) To reverse direction: ◄II< (frame) → ×2 (double speed)
play back frame by frame	>II► (frame) during playback pause. To reverse direction: ◄II< (frame) during frame playback.

* Horizontal lines may appear at the top, bottom, or in the center of the screen. This is not a malfunction.

**Pictures output from the i DV Interface (i.LINK) cannot be played back smoothly in slow mode.

② Touch [↩ RET.] → ×.

To return to the normal playback mode, touch ►II (Play/Pause) twice (once from frame playback).

- You will not hear the recorded sound. You may see mosaic-like images of the previously played picture.

A DUB CTRL (Audio dubbing)

See page 56.

REC CTRL (Recording control) (DCR-HC26E/HC35E)

See page 54.

Menu items

- Available menu items (●) vary depending on which lamp is lit.
- During Easy Handycam operation, the following settings are automatically applied (p. 20).

	CAMERA	PLAY/EDIT	Easy Handycam
MANUAL SET menu (p. 44)			
PROGRAM AE	●	–	AUTO
P EFFECT	●	●	OFF
AUTO SHTR	●	–	ON
CAMERA SET menu (p. 45)			
D ZOOM	●	–	OFF
WIDE SEL	●	–	4:3
STEADYSHOT	●	–	ON
EDITSEARCH	●	–	OFF
N.S.LIGHT	●	–	ON
PLAYER SET (DCR-HC23E/HC24E)/ VCR SET (DCR-HC26E/HC35E) menu (p. 47)			
HiFi SOUND	–	●	STEREO
AUDIO MIX	–	●	–
LCD/VF SET menu (p. 47)			
LCD B.L.	●	●	BRT NORMAL
LCD COLOR	●	●	–
VF B.L.	●	●	BRT NORMAL
WIDE DISP	●	●	–
TAPE SET menu (p. 48)			
REC MODE (DCR-HC23E/HC24E)	●	–	SP
REC MODE (DCR-HC26E/HC35E)	●	●	SP
AUDIO MODE	●	–	12BIT
REMAIN	●	●	AUTO
SETUP MENU menu (p. 49)			
CLOCK SET	●	●	●
USB STREAM	●	●	OFF
LANGUAGE	●	●	●
DEMO MODE	●	–	ON
OTHERS menu (p. 50)			
WORLD TIME	●	●	–*
BEEP	●	●	●
A.SHUT OFF	●	●	5min
COMMANDER (DCR-HC24E/HC35E)	●	●	ON
DISP OUT	●	●	LCD

* The value set before Easy Handycam operation will be retained during Easy Handycam operation.

MANUAL SET menu

– PROGRAM AE/P EFFECT, etc.

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.
See page 36 for details on selecting menu items.

PROGRAM AE

You can record pictures effectively in various situations with the PROGRAM AE function.

►AUTO

Select to automatically record pictures effectively without the [PROGRAM AE] function.

SPOTLIGHT*( )

Select to prevent people's faces from appearing excessively white when subjects are lit by strong light.

PORTRAIT (Soft portrait) ( )

Select to bring out the subject such as people or flowers while creating a soft background.

SPORTS* (Sports lesson) ( )

Select to minimize shake when shooting fast moving subjects.

BEACH&SKI*( )

Select to prevent people's faces from appearing dark in strong light or reflected light, such as at a beach in midsummer or on a ski slope.

SUNSETMOON( )**

Select to maintain the atmosphere of situations such as sunsets, general night views or fireworks.

LANDSCAPE( )**

Select to shoot distant subjects clearly. This setting also prevents your camcorder from focusing on glass or metal mesh in windows that comes in between the camcorder and the subject.

- Items with one asterisk (*) can be adjusted to focus on subjects only a short distance away. Items with two asterisks (**) can be adjusted to focus on subjects farther away.

- The setting returns to [AUTO] when you turn the power off for more than 12 hours.

P EFFECT (Picture effect)

You can add special effects to a picture during recording or playback. P EFFECT appears.

►OFF

Does not use [P EFFECT] setting.

NEG.ART

The color and brightness are reversed.

SEPIA
Pictures appear in sepia.

B&W
Pictures appear in black and white.

SOLARIZE
Pictures appear as an illustration with strong contrast.

PASTEL*
Pictures appear as a pale pastel drawing.

MOSAIC*
Pictures appear mosaic-patterned.

* Not available during playback.

- You can record pictures edited with special effects on another VCR/DVD device, etc. (p. 51).
- You cannot output playback pictures edited with picture effects via the i.LINK DV Interface (i.LINK).
- For DCR-HC26E/HC35E:
  You cannot add effects to externally input pictures.

AUTO SHTR (Auto shutter)

Automatically activates the electronic shutter to adjust the shutter speed when recording in bright conditions if you set it to [ON] (the default setting).

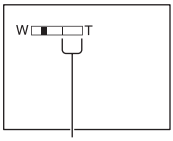
CAMERA SET menu

– D ZOOM/WIDE SEL/STEADYSHOT, etc.

The default settings are marked with ►.
The indicators in parentheses appear when the items are selected.
See page 36 for details on selecting menu items.

D ZOOM (Digital zoom)

You can select the maximum zoom level in case you want to zoom to a level greater than 20 × (the default setting) while recording on a tape. Note that the image quality decreases when you are using the digital zoom.



The right side of the bar shows the digital zooming factor. The zooming zone appears when you select the zooming level.

► OFF
Up to 20 × zoom is performed optically.

40 ×
Up to 20 × zoom is performed optically, and after that, up to 40 × zoom is performed digitally.

640 × (DCR-HC23E)
Up to 20 × zoom is performed optically, and after that, up to 640 × zoom is performed digitally.

800 × (DCR-HC24E/HC26E/HC35E)
Up to 20 × zoom is performed optically, and after that, up to 800 × zoom is performed digitally.

WIDE SEL (Wide select)

You can record a picture in a ratio suitable for the screen on which it will be displayed. Refer also to the operating instructions supplied with your TV for details.

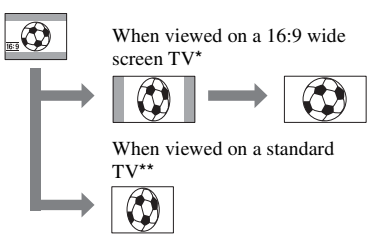
►4:3

Standard setting (to record pictures to be played back on a 4:3 TV).

16:9 WIDE (16:9)

Records pictures to be played back on a 16:9 wide TV in full screen mode.

When viewed on the LCD screen/viewfinder with [16:9 WIDE] selected.



* Picture appears in full screen mode when the wide-screen TV switches to full mode.

** Played in 4:3 mode. When you play a picture in the wide mode, it appears as you have seen on the LCD screen or in the viewfinder.

STEADYSHOT

You can compensate for camera shake (the default setting is [ON]). Set [STEADYSHOT] to [OFF] ( ) when using a tripod (optional) or the conversion lens (optional), then the image becomes natural.

EDITSEARCH

►OFF

Does not display / or + on the LCD screen.

ON

Displays / and + on the LCD screen, and enables the EDIT SEARCH function and Rec review (p. 28).

N.S.LIGHT (NightShot Light)

When using the NightShot plus (p. 24) function to record, you can record clearer pictures by setting [N.S.LIGHT], which emits infrared light (invisible), to [ON] (the default setting).

- Do not cover the infrared port with your fingers or other objects (p. 24).
- Remove the conversion lens (optional) if it is attached.
- The maximum shooting distance using [N.S.LIGHT] is about 3 m (10 feet). If you record subjects in dark places, such as night scenes or in moonlight, set [N.S.LIGHT] to [OFF]. You can make the image color deeper this way.

PLAYER SET/ VCR SET menu

– HiFi SOUND/AUDIO MIX

The PLAYER SET menu is for the DCR-HC23E/HC24E, and the VCR SET menu is for the DCR-HC26E/HC35E.

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.
See page 36 for details on selecting menu items.

HiFi SOUND

You can select whether to play back audio recorded using other devices with dual sound or stereo sound.

►STEREO
Plays back with main and sub sound (or stereo sound).

1
Plays back with main sound (or the left channel sound).

2
Plays back with sub sound (or the right channel sound).

- You can play back, but cannot record a dual sound track cassette on your camcorder.
- The setting returns to [STEREO] when you turn the power off for more than 12 hours.

AUDIO MIX

See page 56.

LCD/VF SET menu

– LCD B.L./LCD COLOR/VF B.L., etc

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.
See page 36 for details on selecting menu items.

LCD B.L. (LCD back light)

You can adjust the brightness of the LCD screen's backlight. The recorded picture will not be affected by this operation.

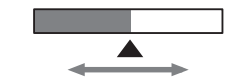
►BRT NORMAL
Standard brightness.

BRIGHT
Brightens the LCD screen.

- When you connect your camcorder to outside power sources, [BRIGHT] is automatically selected for the setting.
- When you select [BRIGHT], battery life is slightly reduced during recording.

LCD COLOR

You can adjust the color on the LCD screen with [↓] / [↑]. The recorded picture will not be affected by this operation.



VF B.L. (Viewfinder back light)

You can adjust the brightness of the viewfinder. The recorded picture will not be affected by this operation.

►BRT NORMAL
Standard brightness.

BRIGHT
Brightens the viewfinder screen.

- When you connect your camcorder to outside power sources, [BRIGHT] is automatically selected for the setting.

- When you select [BRIGHT], battery life is slightly reduced during recording.

WIDE DISP (Wide display)

You can select how a 16:9 aspect ratio picture appears in the viewfinder and the LCD screen by setting [WIDE SEL] to [16:9 WIDE]. The recorded picture will not be affected by this operation.

►LETTER BOX

Normal setting (standard type of display)

SQUEEZE

Expands the picture vertically if black bands at the top and bottom in 16:9 aspect ratio are undesirable.

TAPE SET menu

– REC MODE/AUDIO MODE/REMAIN

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.

See page 36 for details on selecting menu items.

REC MODE (Recording mode)

►SP (SP)

Records in the SP (Standard Play) mode on a cassette.

LP (LP)

Increases the recording time to 1.5 times the SP mode (Long Play).

- You can record about 510 still images in the SP mode and about 765 still images in the LP mode on a 60 minutes tape.
- If you record in the LP mode, a mosaic-like noise may appear or sound may be interrupted when you play back the tape on other camcorders or VCRs.
- When you mix recordings in the SP mode and in the LP mode on one tape, the playback picture may be distorted or the time code may not be written properly between the scenes.

AUDIO MODE

►12BIT

Records in the 12-bit mode (2 stereo sounds).

16BIT (♪16b)

Records in the 16-bit mode (1 stereo sound with high quality).

SETUP MENU menu

– CLOCK SET/USB STREAM/LANGUAGE, etc.

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.

See page 36 for details on selecting menu items.

REMAIN

►AUTO

Displays the remaining tape indicator for about 8 seconds in situations such as those described below.

- When you set the POWER switch to PLAY/EDIT or CAMERA with a cassette inserted.
- When you touch ► II (Play/Pause).

ON

Always displays the remaining tape indicator.

CLOCK SET

See page 18.

USB STREAM

You can view the pictures displayed on the screen of your camcorder on your computer (USB Streaming) via the USB cable. See “First Step Guide” in the supplied CD-ROM for details (p. 64).

LANGUAGE

You can select the language to be used on the LCD screen.

- Your camcorder offers [ENG[SIMP]] (simplified English) for when you cannot find your native tongue among the options.

DEMO MODE

The default setting is [ON], allowing you to view the demonstration in about 10 minutes, after you have removed a cassette from your camcorder, and slide the POWER switch repeatedly to turn on the CAMERA lamp.

- The demonstration will be suspended in situations such as those described below.
  - – When you touch the screen during the demonstration. (The demonstration starts again after about 10 minutes.)
  - – When a cassette is inserted.
  - – When the POWER switch is set to other than CAMERA.

ETC OTHERS menu

– WORLD TIME/BEEP, etc.

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.
See page 36 for details on selecting menu items.

WORLD TIME

When using your camcorder abroad, you can set the time difference by touching [↓] / [↑], the clock will be adjusted in accordance with the time difference.
If you set the time difference to 0, the clock returns to the originally set time.

BEEP

►ON
A melody sounds when you start/stop recording, or operate the touch panel.

OFF
Cancels the melody.

A.SHUT OFF (Auto shut off)

►5min
The camcorder is automatically turned off when you do not operate your camcorder for more than approximately 5 minutes.

NEVER
The camcorder is not automatically turned off.

- When you connect your camcorder to a wall socket, [A.SHUT OFF] is automatically set to [NEVER].

COMMANDER (DCR-HC24E/HC35E)

The default setting is [ON], allowing you to use the Remote Commander (p. 30).

- Set to [OFF] to prevent your camcorder from responding to a command sent by another VCR remote control unit.

DISP OUT (Display output)

►LCD
Shows displays such as the time code on the LCD screen and in the viewfinder.

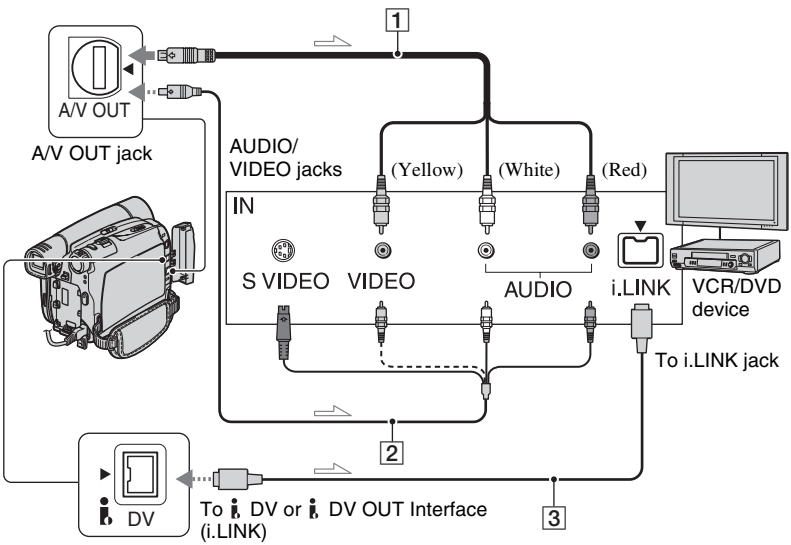
V-OUT/LCD
Shows displays such as the time code on the TV screen, LCD screen, and in the viewfinder.

Dubbing to VCR/DVD device, etc.

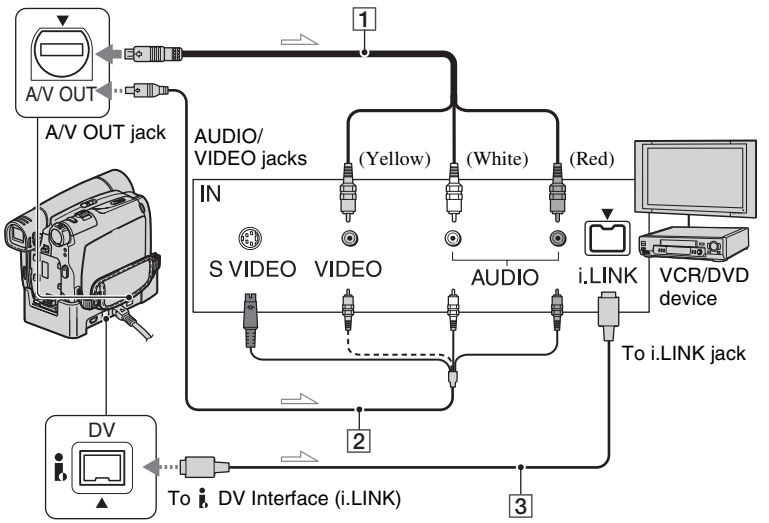
You can copy the picture played back on your camcorder to other recording devices (VCR/DVD device, etc.).
You can connect your camcorder to a VCR/DVD device, etc., using the A/V connecting cable (1), the A/V connecting cable with S VIDEO (2), or the i.LINK cable (3).
Connect your camcorder to the wall socket using the supplied AC Adaptor for this operation (p. 9). Refer also to the instruction manuals supplied with the devices to be connected.

- For DCR-HC35E:
  Do not insert/eject the cassette while your camcorder is on the Handycam Station. This may cause a malfunction.

DCR-HC23E/HC24E/HC26E:



DCR-HC35E:



: Signal flow

1 A/V connecting cable (supplied)

For DCR-HC35E:
The Handycam Station and your camcorder are both equipped with A/V OUT jacks (p. 57). Connect the A/V connecting cable either to the Handycam Station or to your camcorder, depending on your setup.

2 A/V connecting cable with S VIDEO (optional)

When connecting to another device via the S VIDEO jack, by using the A/V connecting cable with an S VIDEO cable, pictures can be reproduced more faithfully than with the supplied A/V cable connection. Connect the white and red plugs (left/right audio) and S VIDEO plug (S VIDEO channel) of an A/V connecting cable. In this case, the yellow (standard video) plug connection is not necessary. S VIDEO connection only will not output audio.

3 i.LINK cable (optional)

Use an i.LINK cable to connect your camcorder to another device equipped with an i.LINK jack. The video and audio signals are transmitted digitally, producing high quality pictures and sound. Note that you cannot output picture and sound separately.

- When you are connecting your camcorder to a monaural device, connect the yellow plug of the A/V connecting cable to the video jack, and the red (right channel) or the white (left channel) plug to the audio jack on the VCR/TV.
- When you connect a device via an A/V connecting cable, set [DISP OUT] to [LCD] (the default setting) (p. 50).

1 Prepare your camcorder for playback.

Insert the recorded cassette.

Slide the POWER switch repeatedly to turn on the PLAY/EDIT lamp.

2 Prepare your VCR/DVD device for recording.

When dubbing to the VCR, insert a cassette for recording.
When dubbing to the DVD recorder, insert a DVD for recording.

If your recording device has an input selector, set it to the appropriate input (such as video input1, video input2).

3 Connect your VCR/DVD device to your camcorder as a recording device.

Connect your camcorder to the input jacks of a VCR or a DVD device.

4 Start playback on the camcorder, and recording on the VCR/DVD device.

Refer to the operating instructions supplied with your recording device for details.

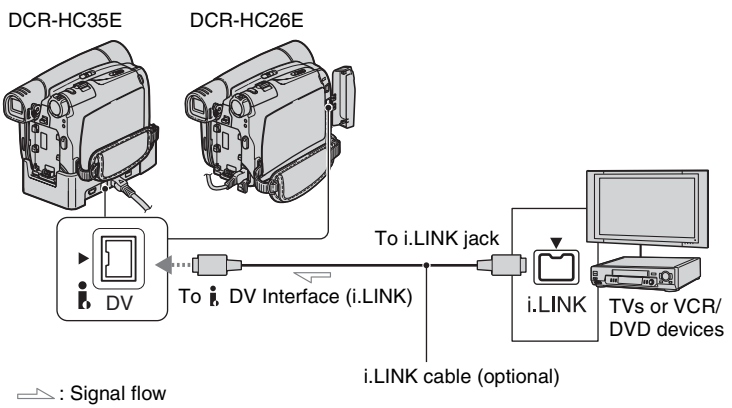
5 When dubbing is complete, stop your camcorder and the VCR/DVD device.

- To record the date/time and camera settings data when connected by the A/V connecting cable, display them on the screen (p. 41, 50).
- The following cannot be output via the DV Interface (i.LINK):
  - Indicators
  - Pictures edited using [P EFFECT] (p. 44)
- When connected using an i.LINK cable, the recorded picture becomes rough when a picture is paused on your camcorder while recording to a VCR.
- When connected using an i.LINK cable, data code (date/time/camera settings data) may not be displayed or recorded depending on the device or application.

Recording pictures from a TV or VCR/DVD device, etc. (DCR-HC26E/HC35E)

You can record pictures or TV programs from a TV or VCR/DVD device, etc., on a tape. Be sure to insert a cassette for recording in your camcorder beforehand.
You can connect your camcorder to a TV, VCR/DVD or an i.LINK-compatible device using the i.LINK cable.
Connect your camcorder to the wall socket using the supplied AC Adaptor for this operation (p. 9). Refer also to the instruction manuals supplied with the devices to be connected.

- You cannot record pictures on your camcorder from a TV or VCR/DVD device that does not have an i.LINK jack.
- You cannot input picture and sound separately.
- Your camcorder can only record from a PAL source. For example, French system video/broadcasts (SECAM) will not be recorded correctly. See page 83 for details on TV color systems.
- For DCR-HC35E:
  Do not insert/eject the cassette while your camcorder is on the Handycam Station. This may cause a malfunction.



1 Connect your TV or VCR/DVD device to your camcorder with an i.LINK cable.

- The DV IN indicator appears when you connect your camcorder and other devices via an i.LINK cable. (This indicator may also appear on the connected device.)

2 If you are recording from a VCR/DVD device, insert a cassette or a DVD.

3 Slide the POWER switch repeatedly to turn on the PLAY/EDIT lamp.

4 Set your camcorder to recording pause mode.

Touch FN → [PAGE3] → [REC CTRL] → [REC PAUSE].

5 **When recording pictures from a VCR/DVD device:**
Start playing the cassette or the disc on the VCR/DVD device.

When recording pictures from a TV:
Select a TV program.

The picture played on the connected device appears on the LCD screen of your camcorder.

6 **Touch [REC START] at the point you want to start recording.**

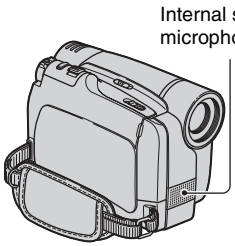
7 **Stop recording.**

Touch ■ (Stop) or [REC PAUSE].

8 **Touch [↩ RET.] → ×.**

Dubbing sound to a recorded tape

You can add sound to a tape already recorded in the 12-bit mode (p. 48) without erasing the original sound.



You can record audio by using the internal stereo microphone.

- You cannot record additional audio:
  - When the tape has been recorded in the 16-bit mode (p. 48).
  - When the tape has been recorded in the LP mode.
  - When your camcorder is connected via an i.LINK cable.
  - When the tape has been recorded in 4CH MIC mode.
  - On blank sections of the tape.
  - When the tape has been recorded in a TV color system other than that of your camcorder (p. 83).
  - When the write-protect tab of the cassette is set to SAVE (p. 83).
  - On sections recorded in HDV format.
- When you add sound, the picture will not be output from the A/V OUT jack. Check the picture on the LCD screen or the viewfinder.
- For DCR-HC35E:
  Do not insert/eject the cassette while your camcorder is on the Handycam Station. This may cause a malfunction.

Recording sound

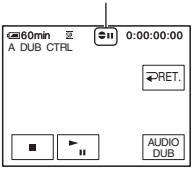
Insert a recorded cassette into your camcorder beforehand.

1 Slide the POWER switch repeatedly to turn on the PLAY/EDIT lamp.

2 Touch ▶II (Play/Pause) to play back the tape, then touch it again at the point where you want to start recording the sound.

3 Touch FN → [PAGE3] → [A DUB CTRL] → [AUDIO DUB].

⏸ appears.



4 Touch ▶II (Play) and start playing back the audio you want to record at the same time.

⏸ appears while recording the new sound in stereo 2 (ST2) during the playback of the tape.

5 Touch ■ (Stop) when you want to stop recording.

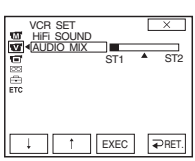
To dub on other scenes, repeat step **2** to select scenes, then touch [AUDIO DUB].

6 Touch [↩ RET.] → ×.

- You can only record additional audio over a tape recorded on your camcorder. The sound may deteriorate when you dub audio on a tape recorded on other camcorders (including other camcorders (DCR-HC23E/HC24E/HC26E/HC35E)).
- For DCR-HC24E/HC35E:
  To set the end point for audio dubbing, beforehand, press ZERO SET MEMORY on the Remote Commander at the scene at which you want to stop audio dubbing during playback. After step 2 to 4, the recording stops automatically at the selected scene.

To check the recorded sound

① Play back the tape on which you have recorded audio (p. 23).
② Touch FN → [PAGE1] → [MENU].
③ Select P (PLAYER SET) for the DCR-HC23E/HC24E, or V (VCR SET) for the DCR-HC26E/HC35E, then touch ↓ / ↑ to select [AUDIO MIX], then touch [EXEC].

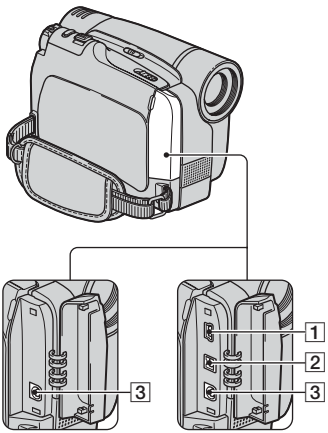


④ Touch ↓ / ↑ to adjust the balance of the original sound (ST1) and the new sound (ST2), then touch [EXEC].

- The original sound (ST1) is output at the default setting.
- Audio balance adjustment returns to the default setting after 12 hours of turning the power off.

Jacks to connect external devices

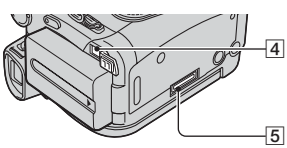
Camcorder



DCR-HC35E

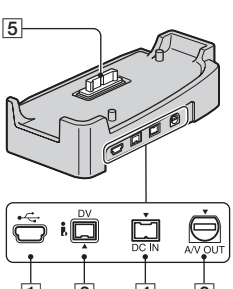
DCR-HC23E/
HC24E/HC26E

Bottom



1 - 4 ...Open the jack cover.

Handycam Station (DCR-HC35E)



1 (USB) jack (p. 58)

2 For DCR-HC23E/HC24E:
DV OUT Interface (i.LINK) (p. 51, 65)
For DCR-HC26E/HC35E:
DV Interface (i.LINK) (p. 51, 54, 65)

3 A/V (audio/video) OUT jack (p. 33, 51)

- For DCR-HC35E:
The Handycam Station and your camcorder are both equipped with A/V OUT jacks.

4 DC IN jack (p. 9)

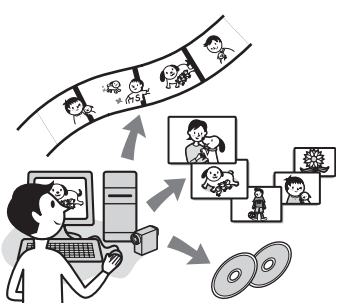
5 For DCR-HC35E:
Interface connector

Before referring to the “First Step Guide” on your computer

When you install the Picture Package software on a Windows computer from the supplied CD-ROM, you can enjoy the following operations by connecting your camcorder to your computer.

- Software and features available for Macintosh computers differ from those available for Windows computers. For details, refer to chapter 6 of “First Step Guide” on the supplied CD-ROM. For “First Step Guide,” see page 60.
- There are 2 ways to connect your camcorder to a computer.
  - USB cable
    This method is good for copying video and sound recorded on a tape to the computer. A USB cable is not supplied with the DCR-HC23E/HC26E models. If necessary, buy a USB 2.0 cable (Type A to Type B-mini.). A Sony product is recommended.
  - i.LINK cable
    This method is good for copying video and sound recorded on a tape. Image data is transferred in more clarity than with a USB cable.

For details on connection, see “First Step Guide.”



Viewing video and pictures on PC

You can view the video and still images copied from your camcorder by selecting from thumbnails. Video and still images are saved in folders by date.

Music Video/Slideshow Producer

You can select your favorite video and still images from video and still images saved on your computer and easily create an original short video or original slide show with added music and visual styles.

Automatic Music Video Producer

You can easily create an original short video with added music and visual styles using video recorded on a tape.

Copying tape to Video CD

You can import the entire contents of a tape to create a video CD.

Save the images on CD-R

You can save video and still images copied onto a computer to a CD-R.

Burning Video CD

You can compose a video CD with a menu of videos and slide shows. ImageMixer VCD2 is compatible with high resolution still images.

USB Streaming Tool

You can view live or recorded images from your camcorder on a computer.

Video Capturing Tool

You can import the entire contents of a tape to a computer.

- The CD-ROM (supplied) includes the following software:
  - USB Driver
  - Picture Package Ver.1.5.1
  - ImageMixer VCD2
  - “First Step Guide”

About "First Step Guide"

"First Step Guide" is an instruction manual you can refer to on your computer. This "First Step Guide" describes basic operations, from initial hookup of your camcorder and computer and making settings, to general operation the first time you use the software stored on the CD-ROM (supplied). Install the CD-ROM, read "Installing the software and "First Step Guide" on a computer" (p. 60), start the "First Step Guide," then follow the instructions.

About the help function of the software

The Help guide explains all software application functions. Refer to the Help guide for further detailed operations after reading the "First Step Guide" thoroughly. To display the Help guide, click the [?] mark on the screen.

System requirements

■ For Windows users

When using Picture Package

OS: Microsoft Windows 2000 Professional, Windows Millennium Edition, Windows XP Home Edition or Windows XP Professional
Standard installation is required.
Operation is not assured if the above OS has been upgraded.

CPU: Intel Pentium III 500 MHz or faster (800 MHz or faster recommended) (For using ImageMixer VCD2, Intel Pentium 4 1.3 GHz or faster recommended)

Application: DirectX 9.0c or later (This product is based on DirectX technology. It is necessary to have DirectX installed.)
Windows Media Player 7.0 or later
Macromedia Flash Player 6.0 or later

Sound system: 16 bit stereo sound card and stereo speakers

Memory: 64 MB or more

Hard disk: Available memory required for installation: 500 MB or more
Available free hard disk space recommended: 6 GB or more (depending on the size of the image files edited)

Display: 4 MB VRAM video card, Minimum 800 × 600 dots, High Color (16 bit color, 65,000 colors), DirectDraw display driver capability (This product will not operate correctly at less than 800 × 600 dots, or 256 colors or less.)

Others: USB port (This must be provided as standard), DV Interface (IEEE1394, i.LINK) (to connect via an i.LINK cable), disc drive (You need a CD-R drive to create a video CD. For the compatible drive, visit the following URL: http://www.ppackage.com/)

■ For Macintosh users

When using ImageMixer VCD2

OS: Mac OS X (v10.1.5 or later)

CPU: iMac, eMac, iBook, PowerBook, Power Mac G3/G4/G5 series

Memory: 128 MB or more

Hard disk: Available memory required for installation: 250 MB or more
Available free hard disk space recommended: 4 GB or more (depending on the size of the image files edited)

Display: Minimum 1,024 × 768 dots, 32,000 colors (This product will not operate correctly at 1,024 × 768 dots or less, or 256 colors or less.)

Application: QuickTime 4 or later (QuickTime 5 recommended)

Other: Disc drive

Before referring to the “First Step Guide” on your computer (Continued)

- When you connect your camcorder to a Macintosh computer using a USB cable, you cannot copy pictures recorded on a tape to the computer. To copy recordings from a tape, connect your camcorder to the computer with an i.LINK cable and use the standard software in the OS.

Installing the software and “First Step Guide” on a computer

You need to install the software etc., with the supplied CD-ROM on your computer **before connecting your camcorder** and your computer. Once installed, no further installation will be necessary. The software to be used varies depending on the computer’s operating system you are using.
Windows computer: Picture Package (including ImageMixer VCD2)
Macintosh computer: ImageMixer VCD2
For the details on the software, refer to “First Step Guide.”

Installing on a Windows computer

Log on as Administrators for installation for Windows 2000/Windows XP.

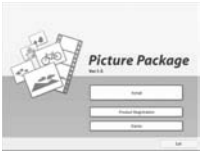
1 Confirm that your camcorder is not connected to the computer.

2 Turn on the computer.

Close all applications running on the computer before installing the software.

3 Place the supplied CD-ROM in the disc drive of your computer.

The installation screen appears.



The software version of Picture Package is displayed as “1.5.”

If the screen does not appear

① Double-click [My Computer].
② Double-click [PICTUREPACKAGE] (Disc drive).*

* Drive names (such as (E:)) may vary depending on the computer.

4 Click [Install].

The software version of Picture Package is displayed as “1.5.”

Depending on the computer’s operating system, a message may appear notifying you that “First Step Guide” cannot be installed automatically with the InstallShield Wizard. In such a case, manually copy “First Step Guide” to your computer according to the message instructions.

5 Select the language for the application to be installed, then click [Next].

6 Click [Next].

7 Read [License Agreement], check [I accept the terms of the license agreement] if you agree, then click [Next].

The software version of Picture Package is displayed as “1.5.”

8 Select where to save the software, then click [Next].

9 Click [Install] on the [Ready to Install the Program] screen.

The installation of Picture Package starts.

10 Click [Next] to install the "First Step Guide."

Depending on the computer, this screen may not be displayed. In such a case, skip to step 11.

11 Click [Next], then follow the on-screen instructions to install ImageMixer VCD2.

12 If the [Installing Microsoft(R) DirectX(R)] screen is displayed, follow the steps below to install DirectX 9.0c. If not, skip to step 13.

① Read [License Agreement], then click [Next].

② Click [Next].

③ Click [Finish].

13 Make sure [Yes, I want to restart my computer now.] is checked, then click [Finish].

The computer turns off once, then starts up again automatically (Restart). The short-cut icons for [Picture Package Menu] and [Picture Package destination folder] (and "First Step Guide," if installed in step 10) appear on the desktop.

14 Remove the CD-ROM from the disc drive of your computer.

- For details on connecting your camcorder and computer, see "First Step Guide" on the supplied CD-ROM (p. 64).
- If you have any questions about Picture Package, contact information is listed on page 64.

Installing on a Macintosh computer

1 Confirm that your camcorder is not connected to the computer.

2 Turn on the computer.

Close all applications running on the computer before installing the software.

3 Place the supplied CD-ROM in the disc drive of your computer.

4 Double-click CD-ROM icon.

5 Copy "FirstStepGuide.pdf," stored in the desired language in the [FirstStepGuide] folder, to your computer.

6 Copy [IMXINST.SIT] in the [MAC] folder of the CD-ROM to a folder of your choice.

7 Double-click [IMXINST.SIT] in the folder it was copied to.

8 Double-click the unzipped [ImageMixerVCD2_Install].

9 When the user acceptance screen is displayed, enter your name and password.

The installation of ImageMixer VCD2 starts.

- For details on connecting your camcorder and computer, see "First Step Guide" on the supplied CD-ROM (p. 64).
- For details on how to use ImageMixer VCD2, refer to software's on-line help.

Viewing “First Step Guide”

Displaying “First Step Guide”

Starting up on a Windows computer

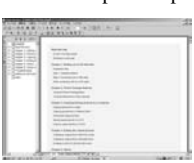
Viewing with Microsoft Internet Explorer Ver.6.0 or later is recommended.
Double-click the icon on the desktop.

You can also start up [First Step Guide] by selecting [Start], [Programs] ([All Programs] for Windows XP), [Picture Package], and [First Step Guide].

- To view “First Step Guide” in HTML without using automatic installation, copy the desired language folder from the [FirstStepGuide] folder on the CD-ROM, and then double-click “index.html.”
- Refer to “FirstStepGuide.pdf” located in your desired language folder in the following cases:
  - When printing “First Step Guide”
  - When “First Step Guide” is not displayed correctly due to the browser setting even in recommended environment.
  - When the HTML version of “First Step Guide” is not installed automatically.

Starting up on a Macintosh computer

Double-click “FirstStepGuide.pdf.”



To view the PDF, Adobe Reader is needed. If it is not installed on your computer, you can download it from the Adobe Systems web page:
http://www.adobe.com/

For inquires about this software

Pixela User Support Center

Pixela Home Page
Picture Package:
http://www.ppackage.com/
ImageMixer VCD2:
http://www.ImageMixer.com/

– North America (Los Angeles) Telephone:
(Toll-Free) +1-800-458-4029
+1-213-341-0163

– Europe (U.K.) Telephone:
(Toll-Free) UK, Germany, France and Spain:
+800-1532-4865
Other countries:
+44-1489-564-764

– Asia (Philippines) Telephone:
+63-2-438-0090

On Copyrights

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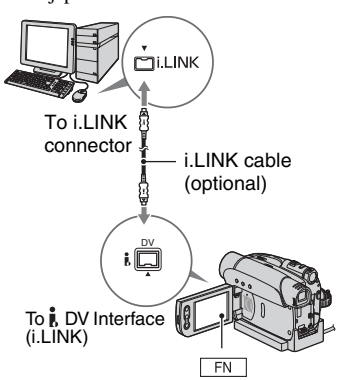
Creating a DVD (Direct Access to “Click to DVD”)

You can create a DVD from a tape with a Sony VAIO series computer* preinstalled with “Click to DVD Ver.1.2” (Sony original software) or later via an i.LINK cable. The picture is automatically copied and written to a DVD.
The following procedures describe how to create a DVD from a recorded tape. For details on system and operation requirements, and “Click to DVD,” visit the following URL:

– Europe
http://www.vaio-link.com/
– USA
http://ciscdb.sel.sony.com/perl/select-p-n.pl
– Asia Pacific Regional
http://www.css.ap.sony.com/
– Korea
http://scs.sony.co.kr/
– Taiwan
http://vaio-online.sony.com/tw/vaio/
– China
http://www.sonystyle.com.cn/vaio/
– Thailand
http://www.sony.co.th/vaio/index.html
– Latin America
http://www.sony-latin.com/vaio/info/index.jsp



- You can only use an i.LINK cable for this operation. You cannot use a USB cable.
- For DCR-HC35E:
Do not insert/eject the cassette while your camcorder is on the Handycam Station. This may cause a malfunction.

* Note that you need a computer equipped with a DVD drive that can write DVDs.

Using the Direct Access to “Click to DVD” function for the first time

The Direct Access to “Click to DVD” function enables you to copy pictures recorded on a tape to a DVD easily if your camcorder is connected to a computer. Before operating the Direct Access to “Click to DVD” function, follow the steps below to start “Click to DVD Automatic Mode Launcher.”

① Turn on the computer.
② Click the start menu, then select [All Programs].
③ Select [Click to DVD] from the programs displayed, then click [Click to DVD Automatic Mode Launcher].
[Click to DVD Automatic Mode Launcher] starts up.

- After you start up [Click to DVD Automatic Mode Launcher] once, from then on it starts up automatically when you turn on your computer.
- [Click to DVD Automatic Mode Launcher] is set up for each Windows XP user.

1 Turn on the computer.

Close all applications running with an i.LINK.

2 Prepare the power source for the camcorder.

Use the supplied AC Adaptor as the power source since it takes a few hours to create a DVD.

3 Slide the POWER switch repeatedly to turn on the PLAY/EDIT lamp.

4 Insert a recorded cassette into your camcorder.

5 Connect your camcorder (DCR-HC23E/HC24E/HC26E) or the Handycam Station (DCR-HC35E) to a computer via an i.LINK cable (p. 65).

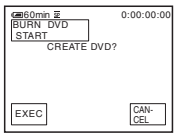
- When you connect your camcorder to a computer, make sure you insert the connector in the correct way. If you insert the connector forcibly, damage may occur and cause camcorder malfunction.
- For details, see “First Step Guide” (p. 64).

6 Touch FN → [PAGE2] → [BURN DVD] → OK.

“Click to DVD” starts up and the on-screen instructions appear on your computer.

7 Place a writable DVD in the disc drive of the computer.

8 Touch [EXEC] on the screen of your camcorder.



The status of the operation on your computer is displayed on the LCD screen of your camcorder.

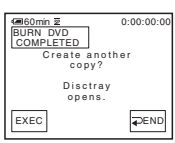
[CAPTURING]: The picture recorded on the tape is being copied to the computer.

[CONVERTING]: The picture is being converted to the MPEG2 format.

[WRITING]: The picture is being written onto the DVD.

- If you use a DVD-RW/+RW which has other data stored on it, the message [This is a recorded disc. Delete and overwrite?] appears on the LCD screen of your camcorder. When you touch [EXEC], the existing data is erased and new data is written.

9 Touch [↩ END] to finish creating a DVD.



The disc tray comes out automatically. To create another DVD with the same content, touch [EXEC].

The disc tray comes out. Place a new writable DVD in the disc drive. Then, repeat step 8 and 9.

To cancel the operation

Touch [CANCEL] on the LCD screen on your camcorder.

- You cannot cancel the operation after [Finalizing DVD.] is displayed on the LCD screen of your camcorder.
- Do not disconnect the i.LINK cable or set the POWER switch to another mode on your camcorder until the picture is completely copied to the computer.
- When [CONVERTING] or [WRITING] is displayed on the screen, capturing of pictures has already finished. Even if you disconnect the i.LINK cable or turn off the camcorder at this stage, DVD creation will continue on your computer.
- If any of the following occurs, copying of the picture is canceled. A DVD containing the data up to the point the operation was canceled is created. Refer to the help files of “Click to DVD” for details.
  - The tape contains a 10-second blank portion.
  - The tape data contains a date before the date of later images.
  - Both normal and wide pictures are recorded on the same tape (Only for “Click to DVD” older than Ver.2.2).
- You cannot operate [BURN DVD] in the following situations:
  - While a tape is running.
  - When “Click to DVD” is started up from the computer.

Troubleshooting

If you run into any problems using your camcorder, use the following table to troubleshoot the problem. If the problem persists, disconnect the power source and contact your Sony dealer.

Overall operations/Easy Handycam

The power does not turn on.

- Attach a charged battery pack to the camcorder (p. 9).
- Use the AC Adaptor to connect to a wall socket (p. 9).
- For DCR-HC35E:
  Insert your camcorder into the Handycam Station correctly (p. 10).

The camcorder does not operate even when the power is set to on.

- Disconnect the AC Adaptor from the wall socket or remove the battery pack, then reconnect it after about 1 minute.
- Press the RESET button (p. 25) using a sharp-pointed object. (If you press the RESET button, all settings are reset.)

Buttons do not work.

- During Easy Handycam operation, not all buttons are functional (p. 21).

You cannot turn Easy Handycam operation on or off.

- During recording or communicating with another device via USB cable, you cannot turn Easy Handycam operation on or off.

Settings change during Easy Handycam operation.

- During Easy Handycam operation, the settings of the functions that are not displayed on the screen return to their defaults. Previously made settings are restored when you cancel the Easy Handycam operation (p. 20, 43).

[DEMO MODE] does not start.

- You cannot view the demonstration together with NightShot plus (p. 24).
- Eject the cassette from your camcorder (p. 19).

The camcorder gets warm.

- The camcorder may get warmer while you use it. This is not a malfunction.

Batteries/Power sources

The power abruptly turns off.

- When approximately 5 minutes have elapsed while you do not operate your camcorder, the camcorder is automatically turned off (A.SHUT OFF). Change the setting of [A.SHUT OFF] (p. 50), or turn on the power again (p. 14), or use the AC Adaptor.
- Charge the battery pack (p. 9).

The CHG (charge) lamp does not light while the battery pack is being charged.

- Slide the POWER switch to OFF(CHG) (p. 9).
- Attach the battery pack to the camcorder correctly (p. 9).
- Connect the mains lead to the wall socket properly (p. 9).
- The battery charge is completed (p. 11).
- For DCR-HC35E:
  Insert your camcorder into the Handycam Station correctly (p. 10).

The CHG (charge) lamp flashes while the battery pack is being charged.

- Attach the battery pack to the camcorder correctly (p. 9). If the problem persists, disconnect the AC Adaptor from the wall socket and contact your Sony dealer. The battery pack may be worn-out.

The power turns off frequently although the remaining battery time indicator indicates that the battery pack has enough power to operate.

- A problem has occurred in the remaining battery time indicator, or the battery pack has not been charged enough. Fully charge the battery again to correct the indication (p. 9).

The remaining battery time indicator does not indicate the correct time.

- Ambient temperature is too high or too low, or the battery pack has not been charged enough. This is not a malfunction.
- Fully charge the battery again. If the problem persists, the battery may be worn-out. Replace it with a new one (p. 9, 84).
- The indicated time may not be correct in certain circumstances. For example, when you open or close the LCD panel, it takes about 1 minute to display the correct remaining battery time.

The battery pack discharges too quickly.

- Ambient temperature is too high or too low, or the battery pack has not been charged enough. This is not a malfunction.
- Fully charge the battery again. If the problem persists, the battery may be worn-out. Replace it with a new one (p. 9, 84).

A problem occurs when the camcorder is connected to the AC Adaptor.

- Turn off the power, and disconnect the AC Adaptor from the wall socket. Then, connect it again.

LCD screen/viewfinder

A rippling effect appears on the LCD screen when you touch it.

- This is not a malfunction. Do not press hard on the LCD screen.

An unknown picture appears on the LCD screen or viewfinder.

- The camcorder is in [DEMO MODE] (p. 49). Touch the LCD screen or insert a cassette to cancel [DEMO MODE].

An unknown indicator appears on the screen.

- A warning indicator or message appears on the screen (p. 80).

The picture remains on the LCD screen.

- This occurs if you disconnect the DC plug from your camcorder or remove the battery pack without turning off the power first. This is not a malfunction.

The buttons do not appear on the touch panel.

- Touch the LCD screen lightly.
- Press DISP/BATT INFO on your camcorder (or DISPLAY on the Remote Commander supplied with the DCR-HC24E/HC35E) (p. 16, 30).

The buttons on the touch panel do not work correctly or do not work at all.

- Adjust the screen ([CALIBRATION]) (p. 88).

The picture in the viewfinder is not clear.

- Move the viewfinder lens adjustment lever until the picture appears clearly (p. 15).

The picture in the viewfinder has disappeared.

- Close the LCD panel. The picture is not displayed in the viewfinder when the LCD panel is open (p. 15).

Dots in lines appear on the LCD screen.

- This is not a malfunction. These dots are not recorded.

Cassette tapes

The cassette cannot be ejected from the compartment.

- Make sure the power source (battery pack or AC Adaptor) is connected correctly (p. 9).
- Remove the battery pack from the camcorder, then attach it again (p. 11).
- Attach a charged battery pack to the camcorder (p. 9).
- Moisture condensation has occurred inside the camcorder (p. 87).

The Cassette Memory indicator or title display does not appear while using a cassette with Cassette Memory.

- This camcorder does not support Cassette Memory, so the indicator does not appear.

The remaining tape indicator is not displayed.

- Set [REMAIN] to [ON] to always display the remaining tape indicator (p. 49).

The cassette is noisier during rewinding or fast-forwarding.

- When using the AC Adaptor, rewind/fast forward speed increases (compared with battery operation) and therefore increases noise. This is not a malfunction.

Recording

Refer also to “Adjusting the image during recording” (p. 72).

The tape does not start when you press REC START/STOP.

- Slide the POWER switch repeatedly to turn on the CAMERA lamp (p. 22).
- The tape has reached the end. Rewind it, or insert a new cassette.
- Set the write-protect tab to REC or insert a new cassette (p. 84).
- The tape is stuck to the drum due to moisture condensation. Remove the cassette and leave your camcorder for at least 1 hour, then re-insert the cassette (p. 87).

You cannot record a smooth transition on a tape from the last recorded scene to the next.

- Perform END SEARCH (p. 28).
- Do not remove the cassette. (The picture will be recorded continuously without a break even when you turn the power off.)
- Do not record pictures in SP mode and LP mode on the same tape.
- Avoid stopping then recording a movie in the LP mode.

The shutter sound is not heard when you record a still image.

- Set [BEEP] to [ON] (p. 50).

[END SCH] does not work.

- Do not eject the cassette after recording (p. 28).
- There is nothing recorded on the cassette.

[END SCH] does not work correctly.

- There is a blank section between recorded sections of the tape. This is not a malfunction.

Adjusting the image during recording

Refer also to “Menu” (p. 74).

The auto focus does not function.

- Set [FOCUS] to [↩ AUTO] (p. 38).
- The recording conditions are not suitable for auto focus. Adjust the focus manually (p. 38).

[STEADYSHOT] does not function.

- Set [STEADYSHOT] to [ON] (p. 46).

The BACK LIGHT function does not function.

- In the following settings, the BACK LIGHT function is canceled.
  – [MANUAL] of [EXPOSURE]
  – [SPOT METER]
- The BACK LIGHT function does not work during Easy Handycam operation (p. 21).

A vertical band appears when recording candlelight or electric light in the dark.

- This occurs when the contrast between the subject and the background is too high. This is not a malfunction.

A vertical band appears when recording a bright subject.

- This phenomenon is called the smear effect. This is not a malfunction.

The color of the picture is not correctly displayed.

- Deactivate the NightShot plus function (p. 24).

The screen picture is bright, and the subject does not appear on the screen.

- Deactivate the NightShot plus function (p. 24), or cancel the BACK LIGHT function (p. 24).

The picture appears too bright, or flickering or changes in color occurs.

- These anomalies may occur when recording pictures under the discharge tube, such as a fluorescent lamp, sodium lamp, or mercury lamp, with [PORTRAIT] or [SPORTS]. This is not a malfunction. Cancel [PROGRAM AE] to reduce the anomaly (p. 44).

Black bands appear when you record a TV screen or computer screen.

- Set [STEADYSHOT] to [OFF] (p. 46).

Playback

You cannot play back tape.

- Slide the POWER switch repeatedly to turn on the PLAY/EDIT lamp.
- Rewind the tape (p. 23).

Horizontal lines appear on the picture. The displayed pictures are not clear or do not appear.

- Clean the head using the cleaning cassette (optional) (p. 88).

No sound or only a low sound is heard.

- Set [HiFi SOUND] to [STEREO] (p. 47).
- Turn up the volume (p. 23).
- Adjust [AUDIO MIX] from the [ST2] (additional sound) side until the sound is heard appropriately (p. 56).
- If you are using an S VIDEO plug, make sure the red and white plugs of the A/V connecting cable are also connected (p. 33).

The sound breaks off.

- Clean the head using the cleaning cassette (optional) (p. 88).

"---" is displayed on the screen.

- The tape you are playing was recorded without setting the date and time.
- A blank section on the tape is being played.
- The data code on a tape with a scratch or noise cannot be read.

Noises appear and NTSC is displayed on the screen.

- The tape was recorded in a TV color system other than that of your camcorder (PAL). This is not a malfunction (p. 83).

♪4ch-12b is displayed on the screen.

- The tape you are playing was recorded on another device with a 4ch microphone (4CH MIC REC). Your camcorder is not compatible with 4ch microphone recording.

Date search does not work correctly. (DCR-HC24E/HC35E)

- Be sure to record more than 2 minutes after the date changed. If one day's recording is too short, your camcorder may not accurately find the point where the recording date changes.
- There is a blank section in the beginning or between recorded sections of the tape. This is not a malfunction.

Remote Commander (DCR-HC24E/HC35E)

The supplied Remote Commander does not function.

- Set [COMMANDER] to [ON] (p. 50).
- Remove any obstructions between the Remote Commander and the remote sensor.
- Keep strong light sources, such as sunlight or overhead lighting, away from the remote sensor, otherwise the Remote Commander may not function properly.
- Insert a fresh battery in the compartment with its +/– terminals matching those of the compartment (p. 89).
- Remove the conversion lens (optional) as the remote sensor may be obstructed by it.

Another VCR malfunctions when you use the supplied Remote Commander.

- Select a commander mode other than VTR 2 for your VCR.
- Cover the sensor of your VCR with black paper.

Menu

Menu items are grayed out.

- You cannot select grayed items in the current recording/playback situation.

You cannot use [SPOT FOCUS].

- You cannot use [SPOT FOCUS] together with [PROGRAM AE].

You cannot use [SPOT METER].

- You cannot use [SPOT METER] together with NightShot plus.
- If you set [PROGRAM AE], [SPOT METER] is automatically set to [↩ AUTO].

You cannot use [FADER].

- You cannot use [FADER] together with [SELF TIMER].

You cannot use [EXPOSURE].

- You cannot use [EXPOSURE] together with NightShot plus.
- If you set [PROGRAM AE], [EXPOSURE] is automatically set to [↩ AUTO].

You cannot use [WHT BAL].

- You cannot use [WHT BAL] together with NightShot plus.

You cannot use [PROGRAM AE].

- You cannot use [PROGRAM AE] together with NightShot plus.

Dubbing/Editing/Connecting to other devices

Pictures output from the camcorder do not appear on the screen of the connected device. (DCR-HC35E)

- When attaching the camcorder to the Handycam Station, close the DC IN jack cover on the camcorder, and then fully insert the camcorder into the Handycam Station in the correct way securely (p. 10).

Time code and other information appear on the display of the connected device.

- Set [DISP OUT] to [LCD] while connected with an A/V connecting cable (p. 50).

You cannot dub correctly using the A/V connecting cable.

- The A/V connecting cable is not connected properly. Make sure that the A/V connecting cable is connected to the input jack of another device for dubbing a picture from your camcorder (p. 51).

New sound added to a recorded tape is not heard.

- Adjust [AUDIO MIX] from the [ST1] (original sound) side until the sound is heard appropriately (p. 56).

Pictures from connected devices are not displayed correctly.

- The input signal is not PAL (p. 83).

The picture gets disturbed or dark, or the sounds get distorted. (DCR-HC35E)

- A/V connecting cables are connected to both your camcorder and the Handycam Station. Disconnect one of the A/V connecting cables.

Connecting to a computer

The computer does not recognize your camcorder. USB i.LINK

- Disconnect the cable from the computer and camcorder, then connect it again securely.
- Disconnect USB devices other than the keyboard, the mouse, and the camcorder from the ψ (USB) jack on the computer.
- Disconnect the cable from the computer and camcorder, restart the computer, then connect them again correctly.
- For DCR-HC35E:
  Insert you camcorder into the Handycam Station correctly (p. 10).

An error message appears when you place the supplied CD-ROM in your computer.

- Set the computer display as follows:
  – Windows: 800 × 600 dots or more, High Color (16 bits, 65,000 colors) or more
  – Macintosh: 1,024 × 768 dots or more, 32,000 colors or more

You cannot view the video your camcorder is seeing on the computer. USB i.LINK

- Disconnect the cable from the computer, turn on the camcorder, then connect it again.
- Slide the POWER switch repeatedly to turn on the CAMERA lamp on your camcorder, and set [USB STREAM] to [ON] (p. 49). (Only when connected to the Windows computer with the USB cable)

You cannot view the video recorded on a tape on the computer. USB i.LINK

- Disconnect the cable from the computer, then connect it again.
- Slide the POWER switch repeatedly to turn on the PLAY/EDIT lamp on your camcorder and set [USB STREAM] to [ON] (p. 49). (Only when connected to the Windows computer with the USB cable)

You cannot view the video recorded on a tape on the Macintosh computer. USB

- When you connect your camcorder to a Macintosh computer using a USB cable, you cannot copy pictures recorded on a tape to the computer. To copy recordings from a tape, connect your camcorder to the computer with an i.LINK cable and use the standard software in the OS.

The image on tape does not appear on the screen of the Windows computer during USB Streaming. USB

- The USB driver has been registered incorrectly as the computer was connected to your camcorder before the installation of the USB driver was completed. Follow the procedure below to install the USB driver correctly.

■ **For Windows Me**

1. Check that your camcorder is connected to a computer.
2. Right-click [My Computer], then click [Properties].
   The [System Properties] screen appears.
3. Click the [Device Manager] tab.
4. If the devices below are already installed, right-click them, then click [Remove] to delete them.
   – [USB Audio Device] in the [Sound, video and game controllers] folder
   – [USB Device] in the [Other devices] folder
   – [USB Composite Device] in the [Universal Serial Bus Controller] folder
5. When the [Confirm Device Removal] screen appears, click [OK].
6. Turn off the power of your camcorder, disconnect the USB cable, then restart the computer.

7 Place the supplied CD-ROM in the disc drive of your computer.

8 Follow the steps below and try to install the USB driver again.

1 Double-click [My Computer].

2 Right-click [PICTUREPACKAGE] (Disc drive)*.

* Drive names (such as (E:)) may vary depending on the computer.

3 Click [Open].

4 Double-click [Driver].

5 Double-click [Setup.exe].

- Deleting anything other than [USB Audio Device], [USB Device] and [USB Composite Device] may cause a malfunction of your computer.

■ For Windows 2000

Log on as Administrator.

1 Check that your camcorder is connected to a computer.

2 Right-click [My Computer], then click [Properties].

The [System Properties] screen appears.

3 Click the [Hardware] tab → [Device Manager] → [View] → [Devices by type].

4 If the devices below are already installed, right-click them, then click [Uninstall] to delete them.

– [USB Composite Device] in the [Universal Serial Bus Controller] folder

– [USB Audio Device] in the [Sound, video and game controller] folder

– [Composite USB Device] in the [Other devices] folder

5 When the [Confirm Device Removal] screen appears, click [OK].

6 Turn off the power of your camcorder, disconnect the USB cable, then restart the computer.

7 Place the supplied CD-ROM in the disc drive of your computer.

8 Follow the steps below and try to install the USB driver again.

1 Double-click [My Computer].

2 Right-click [PICTUREPACKAGE] (Disc drive)*.

* Drive names (such as (E:)) may vary depending on the computer.

3 Click [Open].

4 Double-click [Driver].

5 Double-click [Setup.exe].

- Deleting anything other than [USB Composite Device], [USB Audio Device] and [Composite USB Device] may cause a malfunction of your computer.

■ For Windows XP

Log on as Administrator.

1 Check that your camcorder is connected to a computer.

2 Click [Start].

3 Right-click [My Computer], then click [Properties].

The [System Properties] screen appears.

4 Click the [Hardware] tab → [Device Manager] → [View] → [Devices by type].
5 If the devices below are already installed, right-click them, then click [Uninstall] to delete them.
– [USB Composite Device] in the [Universal Serial Bus Controller] folder
– [USB Audio Device] in the [Sound, video and game controller] folder
– [USB Device] in the [Other devices] folder
6 When the [Confirm Device Removal] screen appears, click [OK].
7 Turn off the power of your camcorder, disconnect the USB cable, then restart the computer.
8 Place the supplied CD-ROM in the disc drive of your computer.
9 Follow the steps below and try to install the USB driver again.
1 Double-click [My Computer].
2 Right-click [PICTUREPACKAGE] (Disc drive)*.
* Drive names (such as (E:)) may vary depending on the computer.
3 Click [Open].
4 Double-click [Driver].
5 Double-click [Setup.exe].

• Deleting anything other than [USB Composite Device], [USB Audio Device] and [USB Device] may cause a malfunction of your computer.

[Cannot start Easy Handycam with USB connected.] appears on the screen of your camcorder. USB

• You cannot start the Easy Handycam settings while the USB cable is connected. Disconnect the USB cable from your camcorder first.

There is no sound when the camcorder is connected to the Windows computer via a USB cable. USB

• Change the settings for your computer environment as described in the following procedures:
1 Select [Start] → [Programs]([All Programs] for Windows XP) → [Picture Package] → [Handycam Tools] → [USB Streaming Tool].
2 Select another device on the [Select audio device] screen.
3 Follow the on-screen instructions, click [Next], then click [Done].

The movie is not smooth during USB Streaming. USB

• Change the settings as described in the following procedures:
1 Select [Start] → [Programs]([All Programs] for Windows XP) → [Picture Package] → [Handycam Tools] → [USB Streaming Tool].
2 Adjust the slider in the (-) direction on [Select video quality].
3 Follow the on-screen instructions, click [Next], then click [Done].

Picture Package does not function correctly.

• Close Picture Package, then restart the computer.

An error message appears while operating Picture Package.

- Close Picture Package first, then slide the POWER switch on your camcorder to turn on another lamp.

The CD-R drive is not recognized or data cannot be written on the CD-R in Picture Package Auto Video, Producer, CD Backup, or VCD Maker.

- For compatible drives, visit the following URL:
  http://www.ppackage.com/

“First Step Guide” is not displayed correctly.

- Follow the procedure below and refer to “First Step Guide” (FirstStepGuide.pdf).
  1. Place the supplied CD-ROM in the disc drive of your computer.
  2. Double-click [My Computer].
  3. Right-click [PICTUREPACKAGE] (Disc drive)*.
     * Drive names (such as (E:)) may vary depending on the computer.
  4. Click [Explorer].
  5. Double-click [FirstStepGuide].
  6. Double-click the desired language folder.
  7. Double-click “FirstStepGuide.pdf.”

Warning indicators and messages

Self-diagnosis display/Warning indicators

If indicators appear on the LCD screen or in the viewfinder, check the following.
Some symptoms you can fix by yourself. If the problem persists even after you have tried a couple of times, contact your Sony dealer or local authorized Sony service facility.

C:(or E:) □□:□□ (Self-diagnosis display)

C:04:□□

- The battery pack is not an "InfoLITHIUM" battery pack. Use an "InfoLITHIUM" battery pack (p. 84).
- Connect the DC plug of the AC Adaptor to the DC IN jack of your camcorder securely (p. 9).

C:21:□□

- Moisture condensation has occurred. Remove the cassette and leave your camcorder for at least 1 hour, then re-insert the cassette (p. 87).

C:22:□□

- Clean the head using a cleaning cassette (optional) (p. 88).

C:31:□□ / C:32:□□

- Symptoms that are not described above have occurred. Remove and insert the cassette, then operate your camcorder again. Do not perform this procedure if moisture condensation has occurred (p. 87).
- Remove the power source. Reconnect it and operate your camcorder again.
- Change the cassette. Press RESET (p. 25), and operate your camcorder again.

E:61:□□ / E:62:□□

- Contact your Sony dealer or local authorized Sony service facility. Inform them of the 5-digit code, which starts from "E."

(Battery level warning)

- The battery pack is nearly used up.
- Depending on the operating, environment, or battery conditions, may flash, even if there are approximately 5 to 10 minutes remaining.

(Moisture condensation warning)*

- Eject the cassette, remove the power source, and then leave it for about 1 hour with the cassette lid open (p. 87).

(Warning indicators pertaining to the tape)

Slow flashing:

- There is less than 5 minutes remaining on the tape.
- No cassette is inserted.*
- The write-protect tab on the cassette is set to lock (p. 84).*

Fast flashing:

- The tape has run out.*

⏏ (Eject cassette warning)*

Slow flashing:

- The write-protect tab on the cassette is set to lock (p. 84).

Fast flashing:

- Moisture condensation has occurred (p. 87).
- The self-diagnosis display code is displayed (p. 80).

* You hear a melody when the warning indicators appear on the screen (p. 50).

Description of warning messages

If messages appear on the screen, follow the instructions.

■ Battery/Power

Use the "InfoLITHIUM" battery pack. (p. 84)

Battery level is low.

- Change the battery (p. 9, 84).

Old battery. Use a new one. (p. 84)

⏏ Re-attach the power source. (p. 9)

Use new AC adapter or reinsert. (p. 9)

■ Moisture condensation

⏏ Moisture condensation. Eject the cassette (p. 87)

Moisture condensation. Turn off for 1H. (p. 87)

■ Cassette/Tape

Insert a cassette. (p. 19)

⏏ Reinsert the cassette. (p. 19)

- Check if the cassette is damaged.

⏏ The tape is locked - check the tab. (p. 84)

The tape has reached the end. (p. 19, 23)

- Rewind or change the tape.

■ Others

Cannot record due to copyright protection. (p. 83)

Cannot add audio. Disconnect the i.LINK cable. (p. 55)

Not recorded in SP mode. Cannot add audio. (p. 55)

Not recorded in 12-bit audio. Cannot add audio. (p. 55)

Cannot add audio on the blank portion of a tape. (p. 55)

Cannot add audio. (p. 55)

- You cannot add sound to a tape recorded on other devices by 4CH MIC REC.

Dirty video head. Use a cleaning cassette. (p. 88)

Cannot start Easy Handycam. (p. 20, 68)

Cannot cancel Easy Handycam. (p. 20, 68)

Cannot start Easy Handycam with USB connected.

- You cannot start the Easy Handycam settings while the USB cable is connected. Disconnect the USB cable from your camcorder first.

Invalid during Easy Handycam operation. (p. 21)

Continued ➡

USB invalid during Easy Handycam

- You cannot connect the USB cable during Easy Handycam. Touch OK.

HDV recorded tape. Cannot playback.

- Your camcorder cannot play back this format. Play back the tape with the equipment that recorded it.

HDV recorded tape. Cannot add audio.

- Your camcorder does not allow you to add audio on a section of a tape recorded in HDV format (p. 55).

Disconnect one AV cable.

- A/V connecting cables are connected to both the camcorder and the Handycam Station. Disconnect one of them.
- When the A/V connecting cable is connected only to your camcorder, your camcorder is not attached to the Handycam Station correctly. Attach the Handycam Station correctly.

Using your camcorder abroad

Power supply

You can use your camcorder in any country/region using the AC Adaptor supplied with your camcorder within the AC 100 V to 240 V, 50/60 Hz range.

On TV color systems

Your camcorder is PAL system, so its picture can only be viewed on a PAL system TV with an AUDIO/VIDEO input jack.

System	Used in
PAL	Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Holland, Hong Kong, Hungary, Italy, Kuwait, Malaysia, New Zealand, Norway, Poland, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, United Kingdom, etc.
PAL - M	Brazil
PAL - N	Argentina, Paraguay, Uruguay.
SECAM	Bulgaria, France, Guiana, Iran, Iraq, Monaco, Russia, Ukraine, etc.
NTSC	Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Guyana, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

Simple setting of the clock by time difference

You can easily set the clock to local time abroad by the time difference you are in. Select [WORLD TIME] in the ETC (OTHERS) menu, then set the time difference (p. 50).

Usable cassette tapes

You can use mini DV format cassettes only. Use a cassette with the Mini DV mark.
Your camcorder is not compatible with cassettes with Cassette Memory.

To prevent a blank section from being created on the tape

Go to the end of the recorded section using END SEARCH (p. 28) before you begin the next recording in the following cases:

- You have played back the tape.
- You have used EDIT SEARCH.

Copyright signal

■ When you play back

If the cassette you play back on your camcorder contains copyright signals, you cannot copy it to a tape in another video camera connected to your camcorder.

■ For DCR-HC26E/HC35E: When you record

You cannot record software on your camcorder that contains copyright control signals for copyright protection of software. [Cannot record due to copyright protection.] appears on the LCD screen, or on the viewfinder if you try to record such software. Your camcorder does not record copyright control signals on the tape when it records.

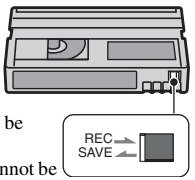
Notes on use

■ When not using your camcorder for a long time

Remove the cassette and store it.

■ To prevent accidental erasure

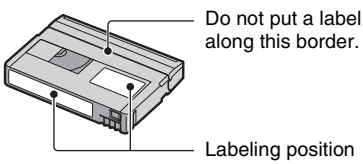
Slide the write-protect tab on the cassette to set it to SAVE.



REC: The cassette can be recorded.
SAVE: The cassette cannot be recorded (write-protected).

■ When labeling the cassette

Be sure to place the label only on the locations shown in the following illustration so as not to cause a malfunction of your camcorder.

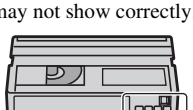


■ After using the cassette

Rewind the tape to the beginning to avoid distortion of the picture or the sound. The cassette should then be put in its case, and stored in an upright position.

■ When cleaning the gold-plated connector

Generally, clean the gold-plated connector on a cassette with a cotton-wool swab after every 10 times it has been ejected.
If the gold-plated connector on the cassette is dirty or dusty, the remaining tape indicator may not show correctly.



Gold-plated connector

About the "InfoLITHIUM" battery pack

This unit is compatible with an "InfoLITHIUM" battery pack (P series). Your camcorder operates only with an "InfoLITHIUM" battery pack.
"InfoLITHIUM" P series battery packs have the InfoLITHIUM P SERIES mark.

What is an "InfoLITHIUM" battery pack?

An "InfoLITHIUM" battery pack is a lithium-ion battery pack that has functions for communicating information related to operating conditions between your camcorder and an optional AC Adaptor/charger.
The "InfoLITHIUM" battery pack calculates the power consumption according to the operating conditions of your camcorder, and displays the remaining battery time in minutes.

To charge the battery pack

- Be sure to charge the battery pack before you start using your camcorder.
- We recommend charging the battery pack in an ambient temperature of between 10 °C to 30 °C (50 °F to 86 °F) until the CHG (charge) lamp turns off. If you charge the battery pack outside of this temperature range, you may not be able to charge it efficiently.
- When charging the battery pack while the AC Adaptor is connected to your camcorder, after charging is complete, disconnect the cable from the DC IN jack on your camcorder or remove the battery pack.

To use the battery pack effectively

- Battery pack performance decreases when the surrounding temperature is 10 °C (50 °F) or below, and the length of time you can use the battery pack becomes shorter. In that case, do one of the following to use the battery pack for a longer time.
  - Put the battery pack in a pocket to warm it up, and insert it in your camcorder right before you start taking shots.
  - Use a large capacity battery pack: NP-FP50/FP70/FP71/FP90 (optional).

- Frequent use of the LCD screen or a frequent playback, fast forward or rewind operation wears out the battery pack faster.
  We recommend using a large capacity battery pack: NP-FP50/FP70/FP71/FP90 (optional).
- Be sure to set the POWER switch to OFF(CHG) when not recording or playing back on your camcorder. The battery pack is also consumed when your camcorder is in recording standby or playback pause.
- Have spare battery packs ready for two or three times the expected recording time, and make trial recordings before making the actual recording.
- Do not expose the battery pack to water. The battery pack is not water resistant.

About the remaining battery time indicator

- When the power goes off even though the remaining battery time indicator indicates that the battery pack has enough power to operate, charge the battery pack fully again. Remaining battery time will be indicated correctly. Note, however, that the battery indication will not be restored if it is used in high temperatures for a long time, or if left in a fully charged state, or when the battery pack is frequently used. Use the remaining battery time indication as a rough guide only.
- The ⌂ mark that indicates low battery flashes even if there are still 5 to 10 minutes of battery time remaining, depending on the operating conditions or ambient temperature.

About storage of the battery pack

- If the battery pack is not used for a long time, fully charge the battery pack and use it up on your camcorder once a year to maintain proper function. To store the battery pack, remove it from your camcorder and put it in a dry, cool place.
- To discharge the battery pack on your camcorder completely, set [A.SHUT OFF] to [NEVER] on the ETC (OTHERS) menu and leave your camcorder in tape recording standby until the power goes off (p. 50).

About battery life

- Battery capacity decreases over time and through repeated use. If decreased usage time between charges becomes significant, it is probably time to replace it with a new one.
- Each battery's life is governed by storage, operating and environmental conditions.

About i.LINK

The DV Interface on this unit is an i.LINK-compliant DV Interface. This section describes the i.LINK standard and its features.

What is i.LINK?

i.LINK is a digital serial interface for transferring digital video, digital audio, and other data to other i.LINK-compatible devices. You can also control other devices using the i.LINK.
i.LINK-compatible devices can be connected using an i.LINK cable. Possible applications are operations and data transactions with various digital AV devices.
When two or more i.LINK-compatible devices are daisy-chained with the unit, operation becomes possible from any device in the chain. Note that operation method may vary, or data transactions may not be possible, depending on specifications and characteristics of the connected devices.

- Normally, only one device can be connected to this unit with an i.LINK cable. When connecting this unit to an i.LINK-compatible device having two or more DV Interfaces, refer to the operating instructions of the device to be connected.
- i.LINK is a more familiar term for the IEEE 1394 data transport bus proposed by Sony, and is a trademark approved by many corporations.
- IEEE 1394 is an international standard standardized by the Institute of Electrical and Electronics Engineers.

About the i.LINK Baud rate

i.LINK's maximum baud rate varies according to the device. There are 3 types.

S100 (approx. 100Mbps*)
S200 (approx. 200Mbps)
S400 (approx. 400Mbps)

The baud rate is listed under "Specifications" in the operating instructions of each piece of equipment. It is also indicated near the i.LINK interface on some devices.
The baud rate may differ from the indicated value when the unit is connected to a device with a different maximum baud rate.

*** What is Mbps?**

Mbps stands for "megabits per second," or the amount of data that can be sent or received in one second. For example, a baud rate of 100 Mbps means that 100 megabits of data can be sent in one second.

To use i.LINK functions on this unit

For details on how to dub when this unit is connected to other video devices having a DV Interface, see page 51, 54.
This unit can also be connected to other i.LINK (DV Interface) compatible devices made by Sony (e.g. a VAIO series personal computer) as well as to video devices. Some i.LINK compatible video devices, such as Digital Televisions, DVD, MICROMV or HDV recorders/players are not compatible with DV devices. Before connecting to other devices, be sure to confirm whether the device is compatible with a DV device or not. For details on precautions and compatible application software, refer also to the operating instructions for the device to be connected.

About the required i.LINK cable

Use the Sony i.LINK 4-pin-to-4-pin cable (during DV dubbing).

Maintenance and precautions

On use and care

- Do not use or store the camcorder and accessories in the following locations.
  - Anywhere extremely hot or cold. Never leave them exposed to temperatures above 60 °C (140 °F), such as under direct sunlight, near heaters or in a car parked in the sun. They may malfunction or become deformed.
  - Near strong magnetic fields or mechanical vibration. The camcorder may malfunction.
  - Near strong radio waves or radiation. The camcorder may not be able to record properly.
  - Near AM receivers and video equipment. Noise may occur.
  - On a sandy beach or anywhere dusty. If sand or dust gets in your camcorder, it may malfunction. Sometimes this malfunction cannot be repaired.
  - Near windows or outdoors, where the LCD screen, the viewfinder, or the lens may be exposed to direct sunlight. This damages the inside of the viewfinder or the LCD screen.
  - Anywhere very humid.
- Operate your camcorder on DC 7.2 V (battery pack) or DC 8.4 V (AC Adaptor).
- For DC or AC operation, use the accessories recommended in these operating instructions.
- Do not let your camcorder get wet, for example, from rain or sea water. If your camcorder gets wet, it may malfunction. Sometimes this malfunction cannot be repaired.
- If any solid object or liquid gets inside the casing, unplug your camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling, disassembling, modifying, physical shock, or impact such as hammering, dropping or stepping on the product. Be particularly careful of the lens.
- Keep the POWER switch setting to OFF(CHG) when you are not using your camcorder.
- Do not wrap your camcorder with a towel, for example, and operate it. Doing so might cause heat to build up inside.
- When disconnecting the mains lead, pull it by the plug and not the lead.
- Do not damage the mains lead such as by placing anything heavy on it.
- Keep metal contacts clean.
- Keep the Remote Commander supplied with the DCR-HC24E/HC35E and button-type battery out of children's reach. If the battery is accidentally swallowed, consult a doctor immediately.
- If the battery electrolytic liquid has leaked,
  - consult your local authorized Sony service facility.
  - wash off any liquid that may have contacted your skin
  - if any liquid gets in your eyes, wash with plenty of water and consult a doctor.

■ When not using your camcorder for a long time

- Periodically turn on the camcorder and play a cassette for about 3 minutes.
- Use up the battery pack completely before storing it.

Moisture condensation

If your camcorder is brought directly from a cold place to a warm place, moisture may condense inside your camcorder, on the surface of the tape, or on the lens. In this state, the tape may stick to the head drum and be damaged or your camcorder may not operate correctly. If there is moisture inside your camcorder, [Moisture condensation. Eject the cassette] or [Moisture condensation. Turn off for 1H.] appears. The indicator will not appear when the moisture condenses on the lens.

■ If moisture condensation has occurred

None of the functions except cassette ejection will work. Eject the cassette, turn off your camcorder, and leave it for about one hour with the cassette lid open. Your camcorder can be used again when both of the following conditions are met:

- The warning message does not appear when the power is turned on.
- Neither or flash when a cassette is inserted and video operation buttons are touched.

If moisture starts to condense, your camcorder sometimes cannot detect condensation. If this happens, the cassette is sometimes not ejected for 10 seconds after the cassette lid is opened. This is not a

malfunction. Do not close the cassette lid until the cassette is ejected.

■ Note on moisture condensation

Moisture may condense when you bring your camcorder from a cold place into a warm place (or vice versa) or when you use your camcorder in a humid place as shown below.

- When you bring your camcorder from a ski slope into a place warmed up by a heating device.
- When you bring your camcorder from an air conditioned car or room into a hot place outside.
- When you use your camcorder after a squall or a shower.
- When you use your camcorder in a hot and humid place.

■ How to avoid moisture condensation

When you bring your camcorder from a cold place into a warm place, put your camcorder in a plastic bag and seal it tightly. Remove the bag when the air temperature inside the plastic bag has reached the surrounding temperature (after about one hour).

Video head

- If the video heads are dirty, video or sound distortion may be apparent.
- If the following problem occurs, clean the video heads for 10 seconds with the Sony DVM-12CLD cleaning cassette (optional).
  - – Mosaic-pattern noise appears on the playback picture or the screen is displayed in blue.

  - – Playback pictures do not move.
  - – Playback pictures do not appear or the sound breaks off.
  - – [Dirty video head. Use a cleaning cassette.] appears on the screen during recording/playback.
- The video heads will wear after long use. If you cannot obtain a clear image even after using a cleaning cassette (optional), it might be because the video heads are worn. Please contact your Sony dealer or local authorized Sony service facility to have the video heads replaced.

LCD screen

- Do not exert excessive pressure on the LCD screen, as it may cause damage.
- If your camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using your camcorder, the back of the LCD screen may heat up. This is not a malfunction.

■ To clean the LCD screen

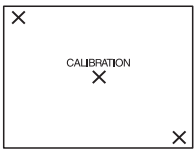
If fingerprints or dust make the LCD screen dirty, it is recommended you use a soft cloth to clean it. When you use the LCD Cleaning Kit (optional), do not apply the cleaning liquid directly to the LCD screen. Use cleaning paper moistened with the liquid.

■ On adjustment of the LCD screen (CALIBRATION)

The buttons on the touch panel may not work correctly. If this happens, follow the procedure below. It is recommended you connect your camcorder to the wall socket using the supplied AC Adaptor during the operation.

① Slide the POWER switch to OFF(CHG).
② Eject the cassette from your camcorder, then disconnect any connecting cables except the AC Adaptor from your camcorder or the Handycam Station supplied with the DCR-HC35E.
③ Slide the POWER switch repeatedly to turn on the PLAY/EDIT lamp while pressing DISP/BATT INFO on your camcorder, and keep pressing down DISP/BATT INFO for about 5 seconds.

④ Touch the "×" displayed on the screen with the corner of the "Memory Stick" or the like.



The position of the "×" changes. If you did not press the right spot, start from step ④ again.

- You cannot calibrate the LCD screen if it is rotated.

On handling the casing

- If the casing is soiled, clean the camcorder body with a soft cloth lightly moistened with water, and then wipe the casing with a dry soft cloth.
- Avoid the following to avoid damage to the finish.
  - Using chemicals such as thinner, benzine, alcohol, chemical cloths, repellent, insecticide and sunscreen.
  - Handling with above substances on your hands.
  - Leaving the casing in contact with rubber or vinyl objects for a long period of time.

About care and storage of the lens

- Wipe the surface of the lens clean with a soft cloth in the following instances:
  - When there are fingerprints on the lens surface.
  - In hot or humid locations
  - When the lens is exposed to salty air such as at the seaside.
- Store in a well-ventilated location subject to little dirt or dust.
- To prevent mold, periodically clean the lens as described above. It is recommended that you operate your camcorder about once a month to keep it in optimum state for a long time.

On charging the pre-installed rechargeable battery

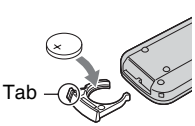
Your camcorder has a pre-installed rechargeable battery to retain the date, time, and other settings even when the POWER switch is set to OFF(CHG). The pre-installed rechargeable battery is always charged while your camcorder is connected to the wall socket via the AC Adaptor or while the battery pack is attached. The rechargeable battery will be fully discharged in about **3 months** if you do not use your camcorder at all without the AC Adaptor connected or the battery pack attached. Use your camcorder after charging the pre-installed rechargeable battery.
However, even if the pre-installed rechargeable battery is not charged, the camcorder operation will not be affected as long as you are not recording the date.

■ Procedures

Connect your camcorder to a wall socket using the supplied AC Adaptor, and leave it with the POWER switch set to OFF(CHG) for more than 24 hours.

To change the battery of the Remote Commander (DCR-HC24E/HC35E)

① While pressing on the tab, inset your fingernail into the slit to pull out the battery case.
② Place a new battery with the + side facing up.
③ Insert the battery case back into the Remote Commander until it clicks.



WARNING

Battery may explode if mistreated. Do not recharge, disassemble or dispose of in fire.

- A button-type lithium battery (CR2025) is used in the Remote Commander. Do not use batteries other than the CR2025.
- When the lithium battery becomes weak, the operating distance of the Remote Commander may shorten, or the Remote Commander may not function properly. In this case, replace the battery with a Sony CR2025 lithium battery. Use of another battery may present a risk of fire or explosion.

Specifications

System

Video recording system
2 rotary heads, Helical scanning system

Audio recording system
Rotary heads, PCM system
Quantization: 12 bits (Fs 32 kHz, stereo 1, stereo 2), 16 bits (Fs 48 kHz, stereo)

Video signal
PAL color, CCIR standards

Usable cassette
Mini DV cassette with the Mini DV mark printed

Tape speed
SP: Approx. 18.81 mm/s
LP: Approx. 12.56 mm/s

Recording/playback time
SP: 60 min (using a DVM60 cassette)
LP: 90 min (using a DVM60 cassette)

Fast forward/rewind time
Approx. 2 min 40 s (using a DVM60 cassette and rechargeable battery pack)
Approx. 1 min 45 s (using a DVM60 cassette and AC Adaptor)

Viewfinder
Electric viewfinder (color)

Image device
3.0 mm (1/6 type) CCD (Charge Coupled Device)
Gross: Approx. 800 000 pixels
Effective (movie): Approx. 400 000 pixels

Lens
DCR-HC23E:
Carl Zeiss Vario-Tessar
20 × (Optical), 640 × (Digital)

DCR-HC24E/HC26E/HC35E:
Carl Zeiss Vario-Tessar
20 × (Optical), 800 × (Digital)

Focal length
f=2.3 ~ 46 mm (3/32 ~ 1 13/16 in.)
When converted to a 35 mm still camera
In CAMERA: 44 ~ 880 mm (1 3/4 ~ 34 1/32 in.)

F1.8 ~ 3.1
Filter diameter: 25 mm (1 in.)

Color temperature
[AUTO], [ONE PUSH], [INDOOR] (3 200 K), [OUTDOOR] (5 800 K)

Minimum illumination
5 lx (lux) (F 1.8)
0 lx (lux) (during NightShot plus function)*1

*1 Objects unable to be seen due to the dark can be shot with infrared lighting.

Input/Output connectors

Audio/Video output
10-pin connector
Video signal: 1 Vp-p, 75 Ω (ohms), unbalanced
Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced
Chrominance signal: 0.3 Vp-p, 75 Ω (ohms), unbalanced
Audio signal: 327 mV (at load impedance 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)

USB jack (DCR-HC23E/HC24E/HC26E)
mini-B

DV input/output (DCR-HC26E)
i.LINK Interface (IEEE1394, 4-pin connector S100)

DV output (DCR-HC23E/HC24E)
i.LINK Interface (IEEE1394, 4-pin connector S100)

LCD screen

Picture
6.2 cm (2.5 type)

Total dot number
123 200 (560 × 220)

General

Power requirements
DC 7.2 V (battery pack)
DC 8.4 V (AC Adaptor)

Average power consumption
During camera recording using the viewfinder 1.8 W
During camera recording using the LCD 2.1 W

Operating temperature
0 °C to 40 °C (32 °F to 104 °F)

Storage temperature
-20 °C to + 60 °C (-4 °F to + 140 °F)

Dimensions (approx.)
65 × 79 × 113 mm
(2 5/8 × 3 1/8 × 4 1/2 in.) (w/h/d)

Mass (approx.)
DCR-HC23E/HC24E/HC26E:
360 g (12 oz) main unit only
420 g (14 oz) including the NP-FP30 rechargeable battery pack and DVM60 cassette.

DCR-HC35E:
370 g (13 oz) main unit only
430 g (15 oz) including the NP-FP30 rechargeable battery pack and DVM60 cassette.

Supplied accessories
See page 8.

Handycam Station DCRA-C151 Input/Output connectors (DCR-HC35E)

Audio/Video output
10-pin connector
Video signal: 1 Vp-p, 75 Ω (ohms), unbalanced
Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced
Chrominance signal: 0.3 Vp-p, 75 Ω (ohms), unbalanced

Audio signal: 327 mV (at load impedance 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)

USB jack
mini-B

DV input/output
i.LINK Interface (IEEE1394, 4-pin connector S100)

AC Adaptor AC-L25A/L25B

Power requirements
AC 100 - 240 V, 50/60 Hz

Current consumption
0.35 - 0.18 A

Power consumption
18 W

Output voltage
DC 8.4 V*2

Operating temperature
0 °C to 40 °C (32 °F to 104 °F)

Storage temperature
-20 °C to + 60 °C (-4 °F to + 140 °F)

Dimensions (approx.)
56 × 31 × 100 mm (2 1/4 × 1 1/4 × 4 in.) (w/h/d) excluding the projecting parts

Mass (approx.)
190 g (6.7 oz) excluding the mains lead

*2 See the label on the AC Adaptor for other specifications.

Rechargeable battery pack (NP-FP30)

Maximum output voltage
DC 8.4 V

Output voltage
DC 7.2 V

Capacity
3.6 Wh (500 mAh)

Dimensions (approx.)
31.8 × 18.5 × 45.0 mm (1 5/16 × 3/4 × 1 13/16 in) (w/h/d)

Mass (approx.)
40 g (1.5 oz)

Operating temperature
0 °C to 40 °C (32 °F to 104 °F)

Type
Lithium ion

Design and specifications are subject to change without notice.

Types of differences

DCR-HC	23E	24E
DV Interface	OUT	OUT
Remote sensor	–	●
Handycam Station	–	–

DCR-HC	26E	35E
DV Interface	IN/OUT	IN/OUT
Remote sensor	–	●
Handycam Station	–	●

● Provided
– Not provided

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Additional information on this product and answers to frequently asked questions can be found at our Customer Support Website.

http://www.sony.net/

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Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2006.01	Official Release	—	—

DCR-HC23E/HC24E/HC26/HC26E/HC35E
RMT-830

SERVICE MANUAL

LEVEL 2

US Model
Canadian Model
AEP Model
UK Model
East European Model
North European Model
E Model
Argentine Model
Australian Model
Brazilian model
Chinese Model
Hong Kong Model
Korea Model

Ver 1.0 2006.01
Revision History

How to use Acrobat Reader

Photo: DCR-HC35E

N MECHANISM (MDX-N110)

Link

SPECIFICATIONS	DISASSEMBLY	SCHEMATIC DIAGRAMS
MODEL INFORMATION TABLE	BLOCK DIAGRAMS	PRINTED WIRING BOARDS
SERVICE NOTE	FRAME SCHEMATIC DIAGRAMS	REPAIR PARTS LIST

- Precaution on Replacing the VC-416 Board

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Mini DV Digital Video Cassette

DIGITAL VIDEO CAMERA RECORDER

SONY®

DCR-HC23E/HC24E/HC26/HC26E/HC35E_L2
9-876-927-31

Sony EMCS Co.

2006A0500-1
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Published by DI Technical Support Department

These specifications are extracted from instruction manual ofDCR-HC23E/HC24E/HC26E/HC35E.

Self Diagnosis Supported model

HANDYCAM

InfoLITHIUM P SERIES

SPECIFICATIONS

System

Video recording system
2 rotary heads, Helical scanning system
Audio recording system
Rotary heads, PCM system
Quantization: 12 bits (Fs 32 kHz, stereo 1, stereo 2), 16 bits (Fs 48 kHz, stereo)
Video signal
PAL color, CCIR standards
Usable cassette
Mini DV cassette with the Mini DV mark printed
Tape speed
SP: Approx. 18.81 mm/s
LP: Approx. 12.56 mm/s
Recording/playback time
SP: 60 min (using a DVM60 cassette)
LP: 90 min (using a DVM60 cassette)
Fast forward/rewind time
Approx. 2 min 40 s (using a DVM60 cassette and rechargeable battery pack)
Approx. 1 min 45 s (using a DVM60 cassette and AC Adaptor)
Viewfinder
Electric viewfinder (color)
Image device
3.0 mm (1/6 type) CCD (Charge Coupled Device)
Gross: Approx. 800 000 pixels
Effective (movie): Approx. 400 000 pixels
Lens
DCR-HC23E:
Carl Zeiss Vario-Tessar
20 × (Optical), 640 × (Digital)

DCR-HC24E/HC26E/HC35E:
Carl Zeiss Vario-Tessar
20 × (Optical), 800 × (Digital)
Focal length
f=2.3 ~ 46 mm (3/32 ~ 1 13/16 in.)
When converted to a 35 mm still camera
In CAMERA: 44 ~ 880 mm (1 3/4 ~ 34 1/32 in.)
F1.8 ~ 3.1
Filter diameter: 25 mm (1 in.)
Color temperature
[AUTO], [ONE PUSH], [INDOOR] (3 200 K), [OUTDOOR] (5 800 K)
Minimum illumination
5 lx (lux) (F 1.8)
0 lx (lux) (during NightShot plus function)*1

*1 Objects unable to be seen due to the dark can be shot with infrared lighting.

Input/Output connectors

Audio/Video output
10-pin connector
Video signal: 1 Vp-p, 75 Ω (ohms), unbalanced
Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced
Chrominance signal: 0.3 Vp-p, 75 Ω (ohms), unbalanced
Audio signal: 327 mV (at load impedance 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
USB jack (DCR-HC23E/HC24E/HC26E)
mini-B
DV input/output (DCR-HC26E)
i.LINK Interface (IEEE1394, 4-pin connector S100)
DV output (DCR-HC23E/HC24E)
i.LINK Interface (IEEE1394, 4-pin connector S100)

LCD screen

Picture
6.2 cm (2.5 type)
Total dot number
123 200 (560 × 220)

General

Power requirements
DC 7.2 V (battery pack)
DC 8.4 V (AC Adaptor)
Average power consumption
During camera recording using the viewfinder 1.8 W
During camera recording using the LCD 2.1 W
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Storage temperature
-20 °C to + 60 °C (-4 °F to + 140 °F)
Dimensions (approx.)
65 × 79 × 113 mm
(2 5/8 × 3 1/8 × 4 1/2 in.) (w/h/d)
Mass (approx.)
DCR-HC23E/HC24E/HC26E:
360 g (12 oz) main unit only
420 g (14 oz) including the NP-FP30 rechargeable battery pack and DVM60 cassette.

DCR-HC35E:
370 g (13 oz) main unit only
430 g (15 oz) including the NP-FP30 rechargeable battery pack and DVM60 cassette.

Supplied accessories
AC Adaptor (1)
Mains lead (1)
Handycam Station (1) (DCR-HC35E)
Wireless Remote Commander (1) (DCR-HC24E/HC35E)
A/V connecting cable (1)
USB cable (1) (DCR-HC24E/HC35E)
Lens cap (1)
Rechargeable battery pack NP-FP30 (1)
CD-ROM “Picture Package Ver.1.5.1” (1)
21-pin adaptor (1) (DCR-HC35E)
Operating Guide (1)
See page 6.

Handycam Station DCRA-C151 Input/Output connectors (DCR-HC35E)

Audio/Video output
10-pin connector
Video signal: 1 Vp-p, 75Ω (ohms), unbalanced
Luminance signal: 1 Vp-p, 75Ω (ohms), unbalanced
Chrominance signal: 0.3 Vp-p, 75Ω (ohms), unbalanced
Audio signal: 327 mV (at load impedance 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
USB jack
mini-B
DV input/output
i.LINK Interface (IEEE1394, 4-pin connector S100)

AC Adaptor AC-L25A/L25B

Power requirements
AC 100 - 240 V, 50/60 Hz
Current consumption
0.35 - 0.18 A
Power consumption
18 W
Output voltage
DC 8.4 V*2
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Storage temperature
-20 °C to + 60 °C (-4 °F to + 140 °F)
Dimensions (approx.)
56 × 31 × 100 mm (2 1/4 × 1 1/4 × 4 in.) (w/h/d) excluding the projecting parts
Mass (approx.)
190 g (6.7 oz) excluding the mains lead

*2 See the label on the AC Adaptor for other specifications.

Rechargeable battery pack (NP-FP30)

Maximum output voltage
DC 8.4 V
Output voltage
DC 7.2 V
Capacity
3.6 Wh (500 mAh)
Dimensions (approx.)
31.8 × 18.5 × 45.0 mm
(1 5/16 × 3/4 × 1 13/16 in) (w/h/d)
Mass (approx.)
40 g (1.5 oz)
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Type
Lithium ion

Design and specifications are subject to change without notice.

Model information table

Model	DCR-HC23E	DCR-HC24E	DCR-HC26	DCR-HC26E	DCR-HC35E
Destination	AEP, EE, NE	AEP, UK, EE, NE	US, CND, E, AR BR, KR	NE, E, AUS, CH, HK	AEP, UK, EE, NE
Color system	PAL	PAL	NTSC	PAL	PAL
DV Interface	OUT	OUT	IN/OUT	IN/OUT	IN/OUT (Note)
Remote commander	×	○	×	×	○
Cradle (Handycam Station)	×	×	×	×	○
CR board	×	×	×	×	CR-061

Note: DV Interface on the Cradle (Handycam Station)

- Abbreviation
  AR : Argentine model
  AUS : Australian model
  BR : Brazilian model
  CH : Chinese model
  CND : Canadian model
  EE : East European model
  HK : Hong Kong model
  J : Japanese model
  JE : Tourist model
  KR : Korea model
  NE : North European model

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

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1. SERVICE NOTE

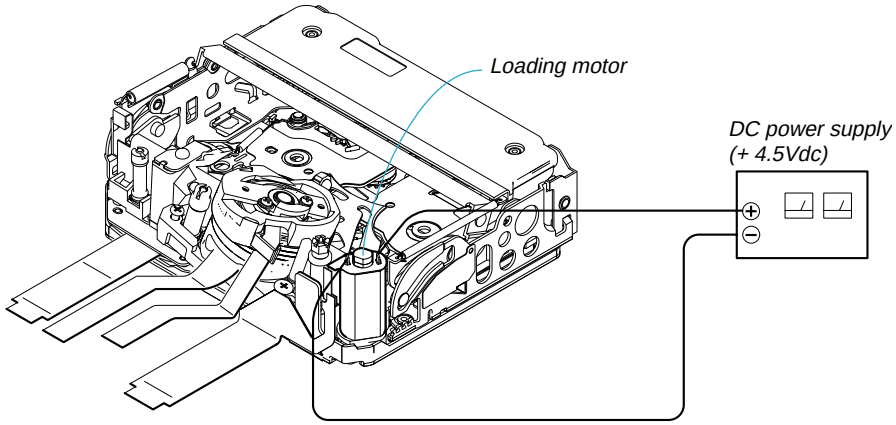
1-1. POWER SUPPLY DURING REPAIRS

In this unit, about 10 seconds after power is supplied to the battery terminal using the regulated power supply (8.4V), the power is shut off so that the unit cannot operate.
These following method is available to prevent this.

Method:
Use the AC power adaptor (AC-L25A/L25B).

1-2. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

① Refer to "2. DISASSEMBLY" to remove the mechanism deck block.
② Supply +4.5V from the DC power supply to the loading motor and unload with a pressing the cassette compartment.



1-3. SETTING THE "FORCED POWER ON" MODE

It is possible to turn on power by adjustment remote commander (RM-95 or NEW LANC JIG).
Operate the VTR function using the adjustment remote commander.

1-3-1. Setting the "Forced Camera Power ON" Mode

1) Select page: 0, address: 01, and set data:01.
2) Select page: D, address: 10, set data:01 and press the "PAUSE (Write)" button of the adjustment remote commander.

1-3-2. Setting the "Forced VTR Power ON" Mode

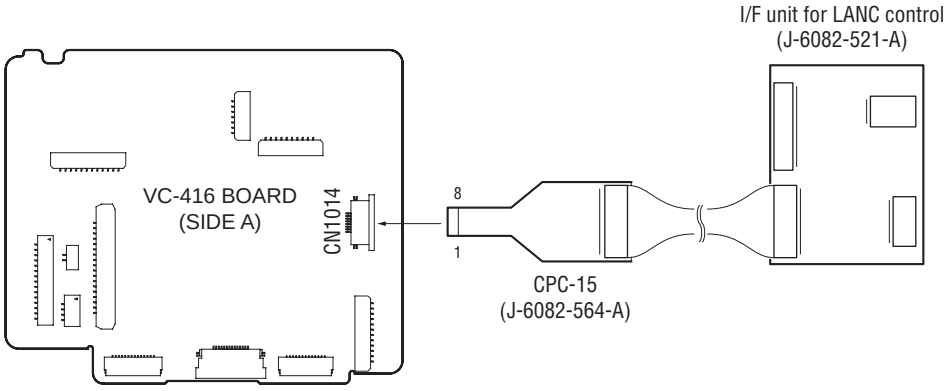
1) Select page: 0, address: 01, and set data:01.
2) Select page: D, address: 10, set data:02 and press the "PAUSE (Write)" button of the adjustment remote commander.

1-3-3. Exiting the "Forced Power ON" Mode

1) Select page: 0, address: 01, and set data:01.
2) Select page: D, address: 10, set data:00 and press the "PAUSE (Write)" button of the adjustment remote commander.
3) Select page: 0, address: 01, and set data: 00.

1-4. USING SERVICE JIG

Connect the CPC-15 jig connector (J-6082-564-A) and I/F unit for LANC conrol (J-6082-521-A) to the CN1014 of VC-416 board.



1-5. SELF-DIAGNOSIS FUNCTION

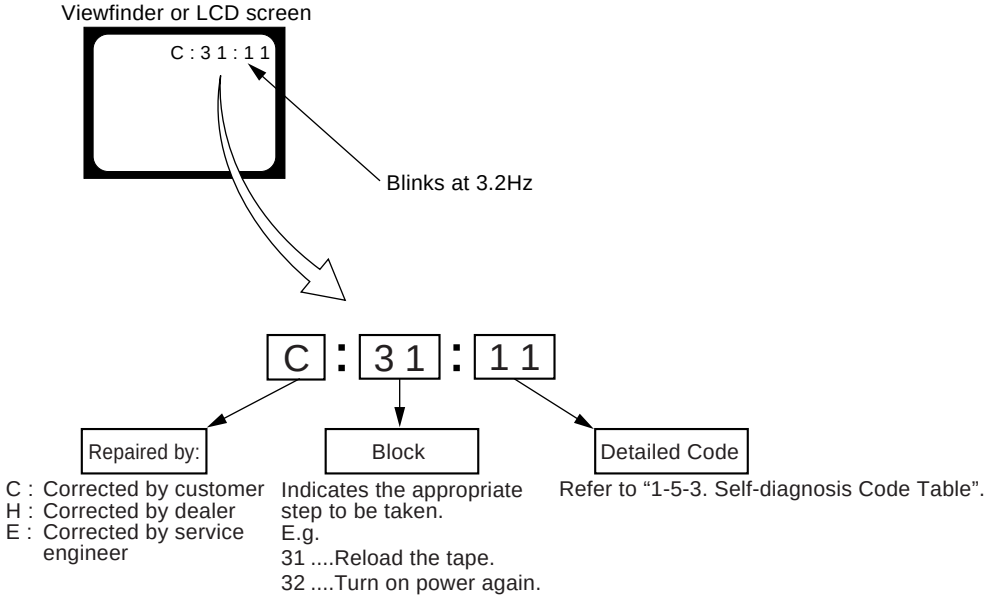
1-5-1. Self-diagnosis Function

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or LCD screen what to do. This function consists of two display; self-diagnosis display and service mode display.

Details of the self-diagnosis functions are provided in the Instruction manual.

1-5-2. Self-diagnosis Display

When problems occur while the unit is operating, the counter of the viewfinder or LCD screen shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the “repaired by:”, “block” in which the problem occurred, and “detailed code” of the problem.


Viewfinder or LCD screen
C : 3 1 : 1 1
Blinks at 3.2Hz
C : 31 : 11
Repaired by:
Block
Detailed Code
C : Corrected by customer
H : Corrected by dealer
E : Corrected by service engineer
Indicates the appropriate step to be taken.
E.g.
31 ....Reload the tape.
32 ....Turn on power again.
Refer to “1-5-3. Self-diagnosis Code Table”.

1-5-3. Self-diagnosis Code Table

Self-diagnosis Code					Symptom/State	Correction
Repaired by:	Block Function		Detailed Code			
C	0	4	0	0	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	2	1	0	0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2	2	0	0	Video head is dirty.	Clean with the optional cleaning cassette.
C	3	1	1	0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	1	1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	2	0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	1	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	2	T reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	2	3	S reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	3	0	FG fault when starting capstan.	Load the tape again, and perform operations from the beginning.
C	3	1	3	1	FG fault during normal capstan operations.	Load the tape again, and perform operations from the beginning.
C	3	1	4	0	FG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3	1	4	1	PG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3	1	4	2	FG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	1	4	3	PG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	1	4	4	Phase fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	2	1	0	LOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	1	1	UNLOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	1	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	2	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	3	S reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	0	FG fault when starting capstan.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	1	FG fault during normal capstan operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	0	FG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	1	PG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	2	FG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	3	PG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	4	Phase fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.

Self-diagnosis Code			Symptom/State	Correction
Repaired by:	Block Function	Detailed Code		
E	6 1	0 0	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin ⑲, of CN3101 of VC-416 board) when focusing is performed when the touch panel is operated in the focus manual mode and the focus motor drive circuit (IC3101 of VC-416 board) when the focusing is not performed.
E	6 1	1 0	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Pin ⑮, of CN3101 of VC-416 board) when zooming is performed when the zoom switch is operated and the zoom motor drive circuit (IC3101 of VC-416 board) when zooming is not performed.
E	6 1	1 1	Focus lens initializing failure and zoom lens initializing failure occur simultaneously.	Inspect the flexible board for breakage or loose connection. If not faulty, inspect the focus and zoom motor drive circuit (IC3101 of VC-416 board).

1-6. PRECAUTION ON REPLACING THE VC-416 BOARD

Exif Model Data Check

When you replace to the repairing board, the written data of repairing board also might be changed to original setting.
When the data has changed because of board replaceing etc, check the data setting (Exif Model Data) is right. If not, rewrite to the right value.

Exif Model Data

Page	Address	Data				
		DCR-HC23E	DCR-HC24E	DCR-HC26	DCR-HC26E	DCR-HC35E
C	D2	32	32	32	32	33
C	D3	33	34	36	36	35
C	D4	45	45	00	45	45

Writing Method:

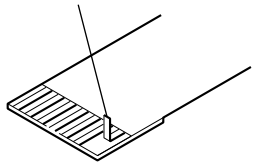
1) Select page: 0, address: 01 and set data: 01.
2) Select page: C, address: D2 to D4, and set the Exif Model Data.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE (Write) button each time to set the data.
3) Select page: 0, address: 01, and set data: 00.

2. DISASSEMBLY

NOTE FOR REPAIR

- Make sure that the flat cable and flexible board are not cracked of bent at the terminal.
  Do not insert the cable insufficiently nor crookedly.
- When remove a connector, dont' pull at wire of connector. It is possible that a wire is snapped.
- When installing a connector, dont' press down at wire of connector.
  It is possible that a wire is snapped.

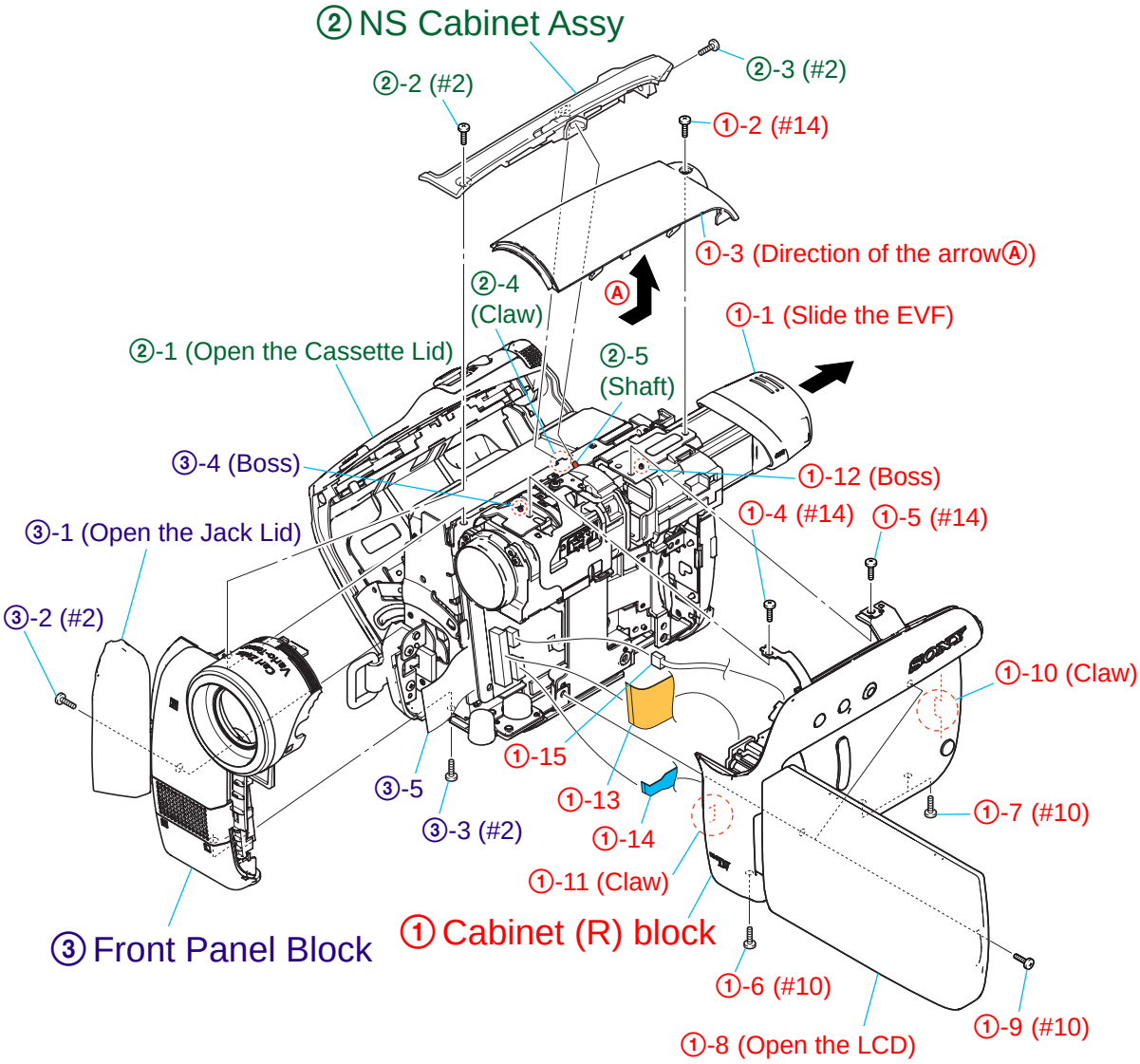
Cut and remove the part of gilt which comes off at the point. (Be careful or some pieces of gilt may be left inside)



2-1. DISASSEMBLY

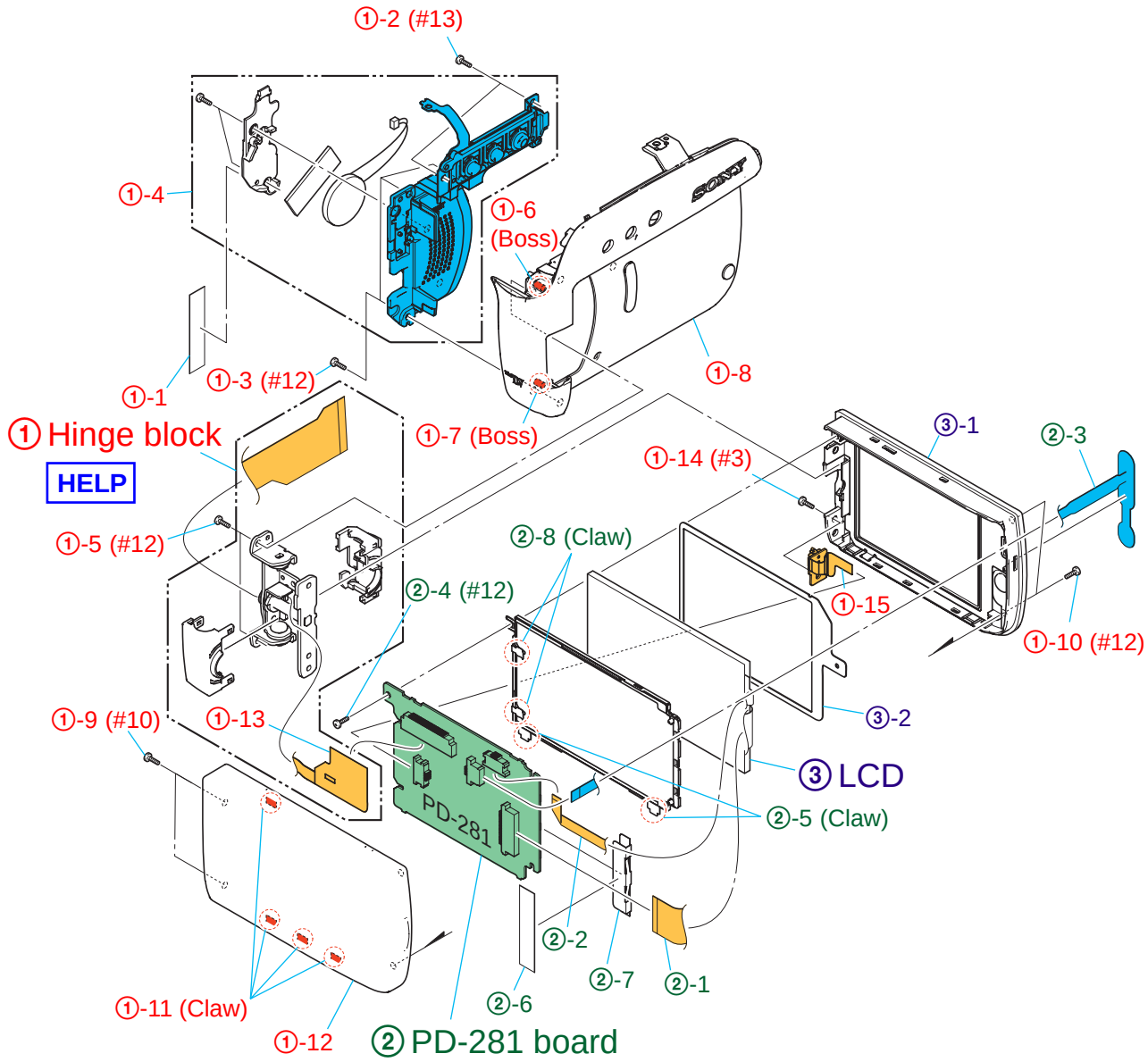
EXPLODED VIEW HARDWARE LIST

2-1-1. OVERALL ASSEMBLY



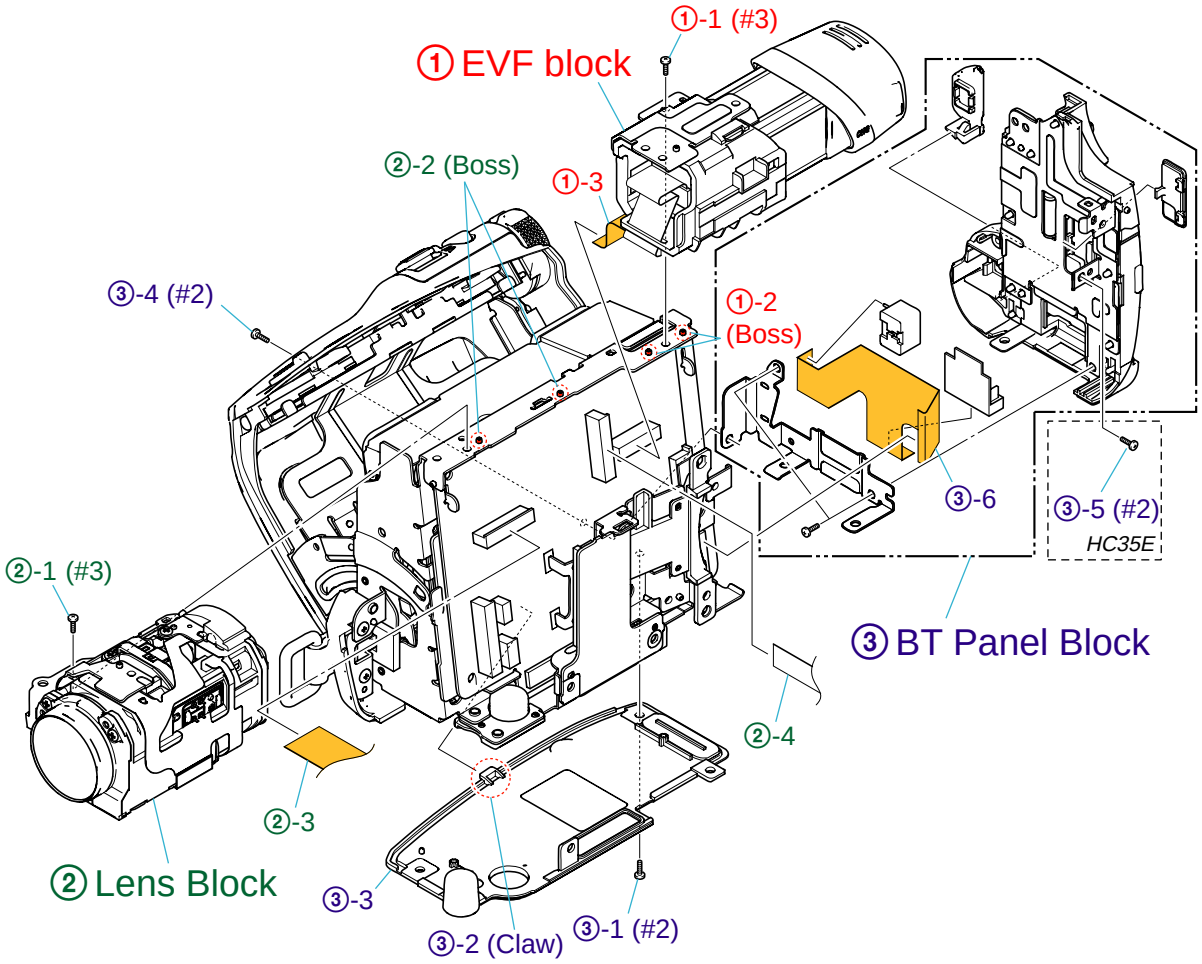
2-1-2. CABINET (R) BLOCK

EXPLODED VIEW HARDWARE LIST



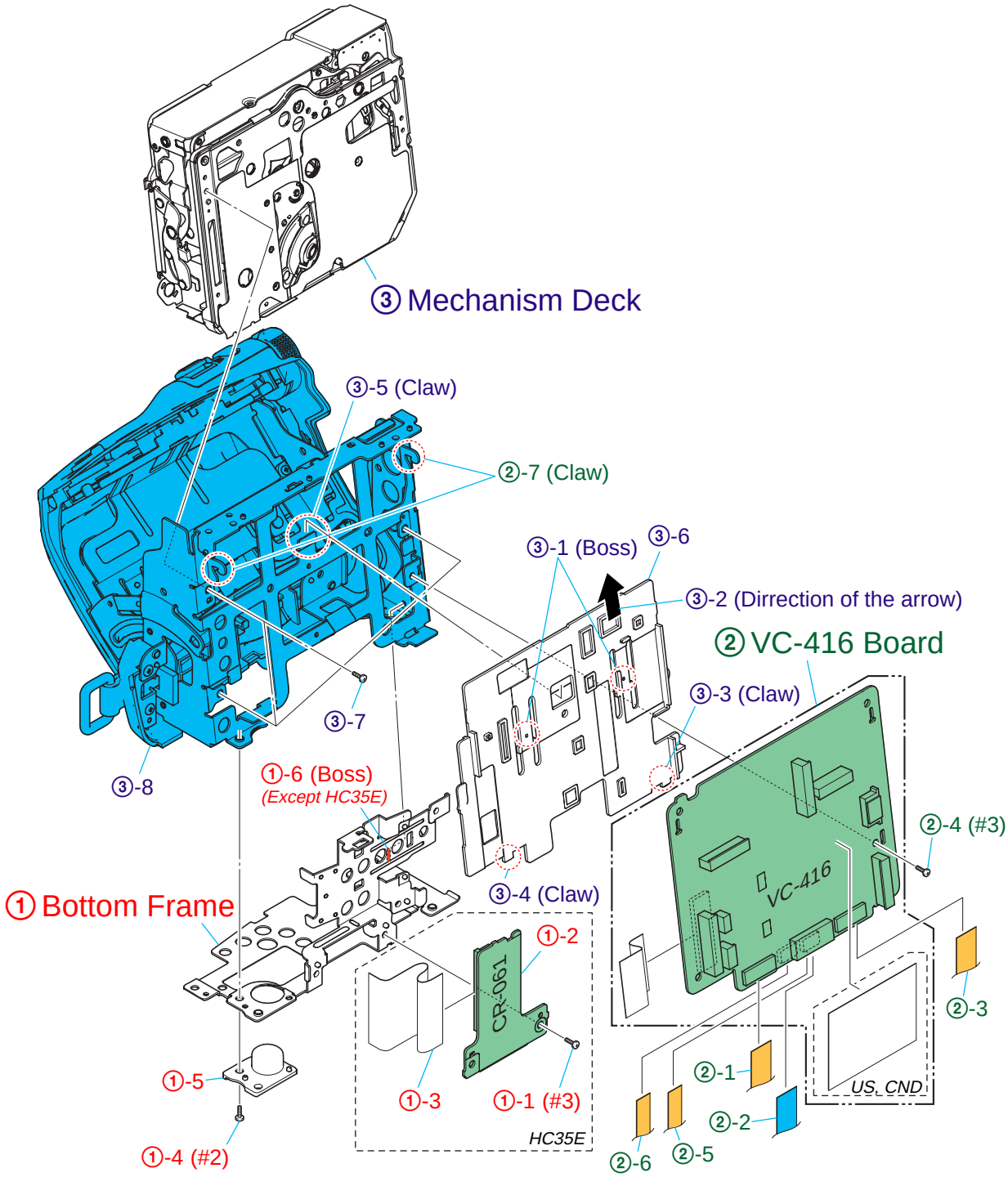
2-1-3. MAIN BLOCK-1

EXPLODED VIEW HARDWARE LIST



2-1-4. MAIN BLOCK-2

EXPLODED VIEW HARDWARE LIST

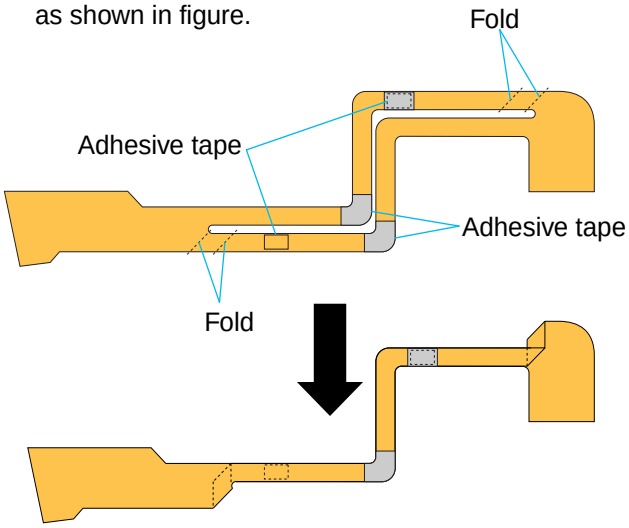


HELP

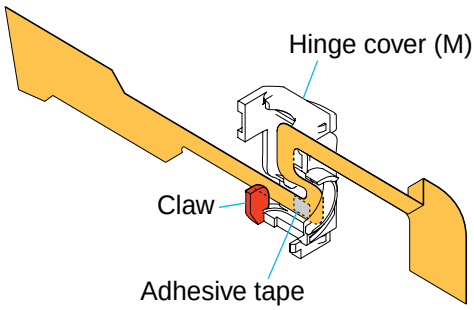
Sheet attachment positions and procedures of processing the flexible boards/harnesses are shown.

THE METHOD OF ATTACHMENT OF FP-380 FLEXIBLE BOARD

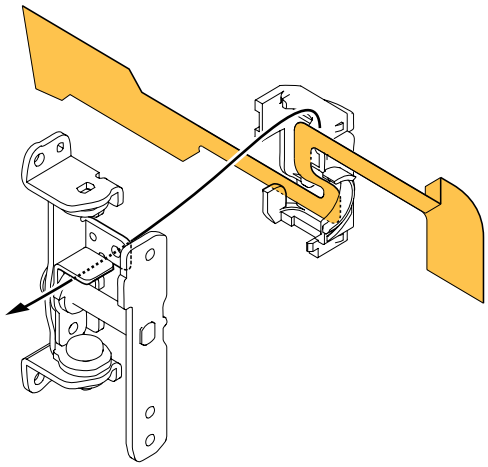
① Fold dotted line parts of the FP-380 flexible board as shown in figure.



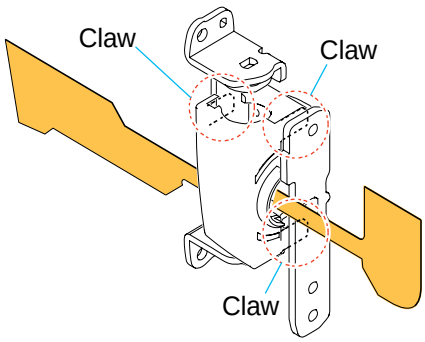
② Hang it on the claw after putting the FP-380 flexible board on the hinge cover (M).



③ Roll the the FP-380 flexible board 90 degrees.



④ Attach two hinge covers as shown in figure.



3. BLOCK DIAGRAMS

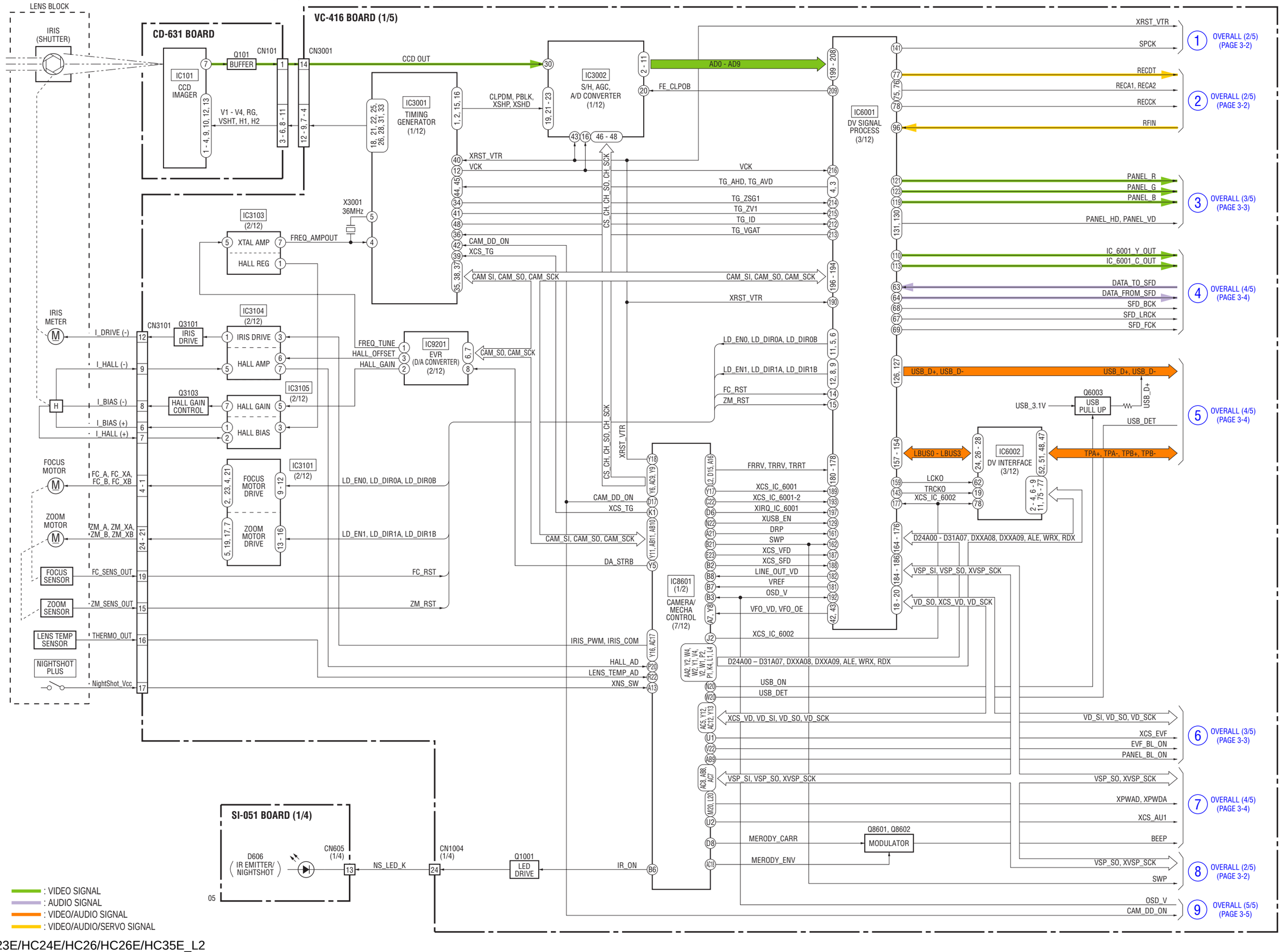
Link

OVERALL BLOCK DIAGRAM (1/5)	OVERALL BLOCK DIAGRAM (5/5)
OVERALL BLOCK DIAGRAM (2/5)	POWER BLOCK DIAGRAM (1/3)
OVERALL BLOCK DIAGRAM (3/5)	POWER BLOCK DIAGRAM (2/3)
OVERALL BLOCK DIAGRAM (4/5)	POWER BLOCK DIAGRAM (3/3)

3. BLOCK DIAGRAMS

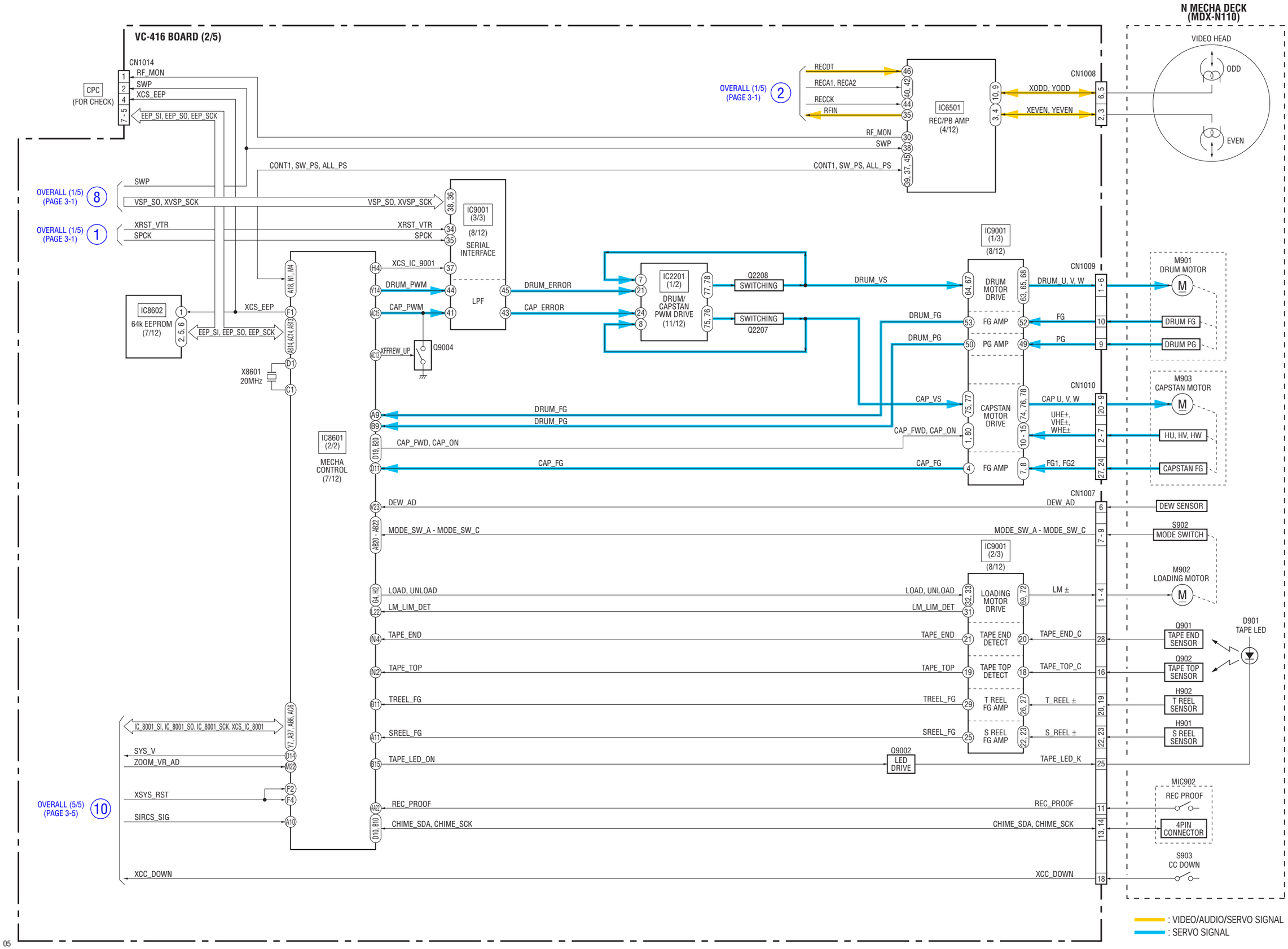
3-1. OVERALL BLOCK DIAGRAM (1/5)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



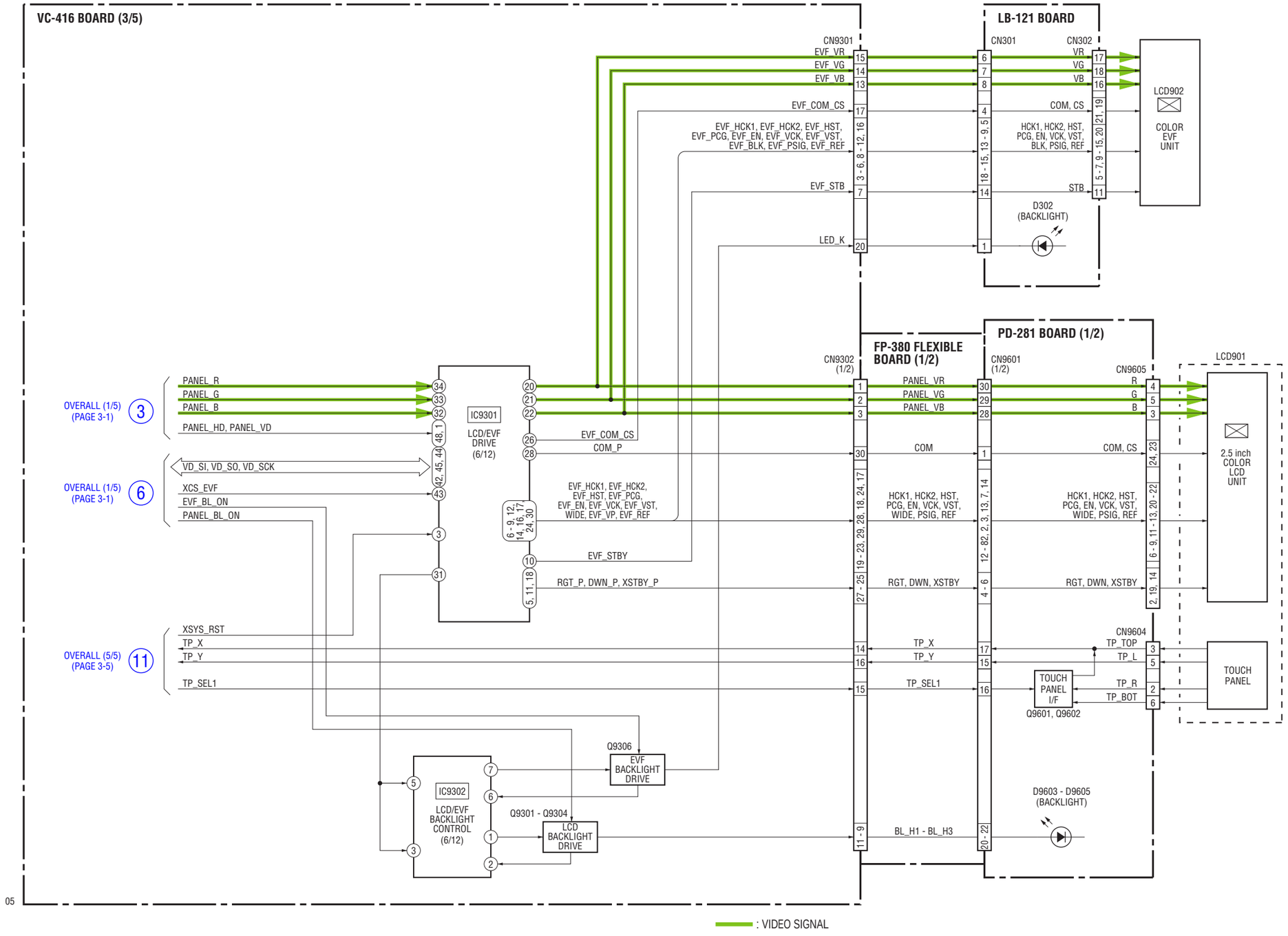
3-2. OVERALL BLOCK DIAGRAM (2/5)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



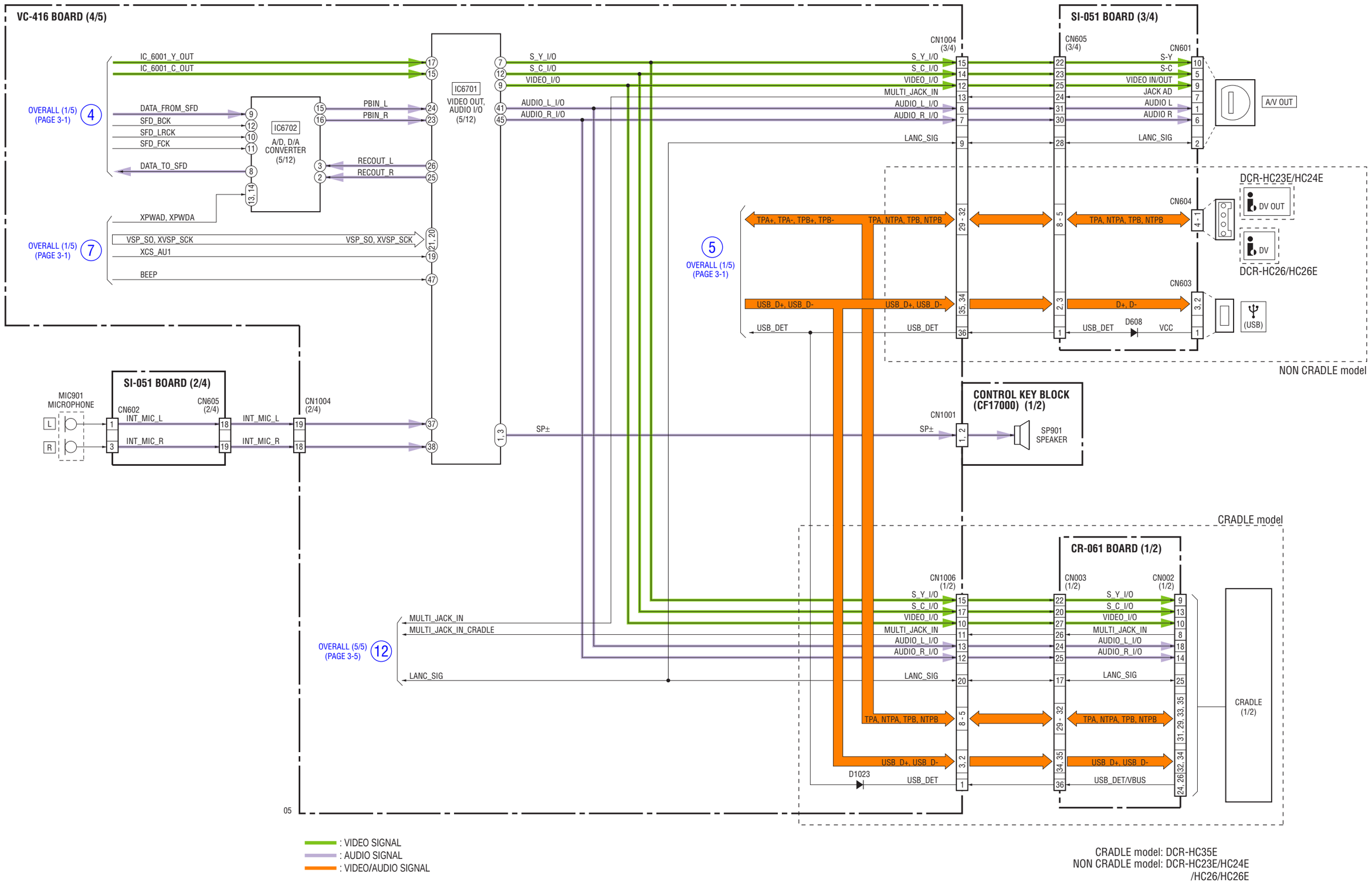
3-3. OVERALL BLOCK DIAGRAM (3/5)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



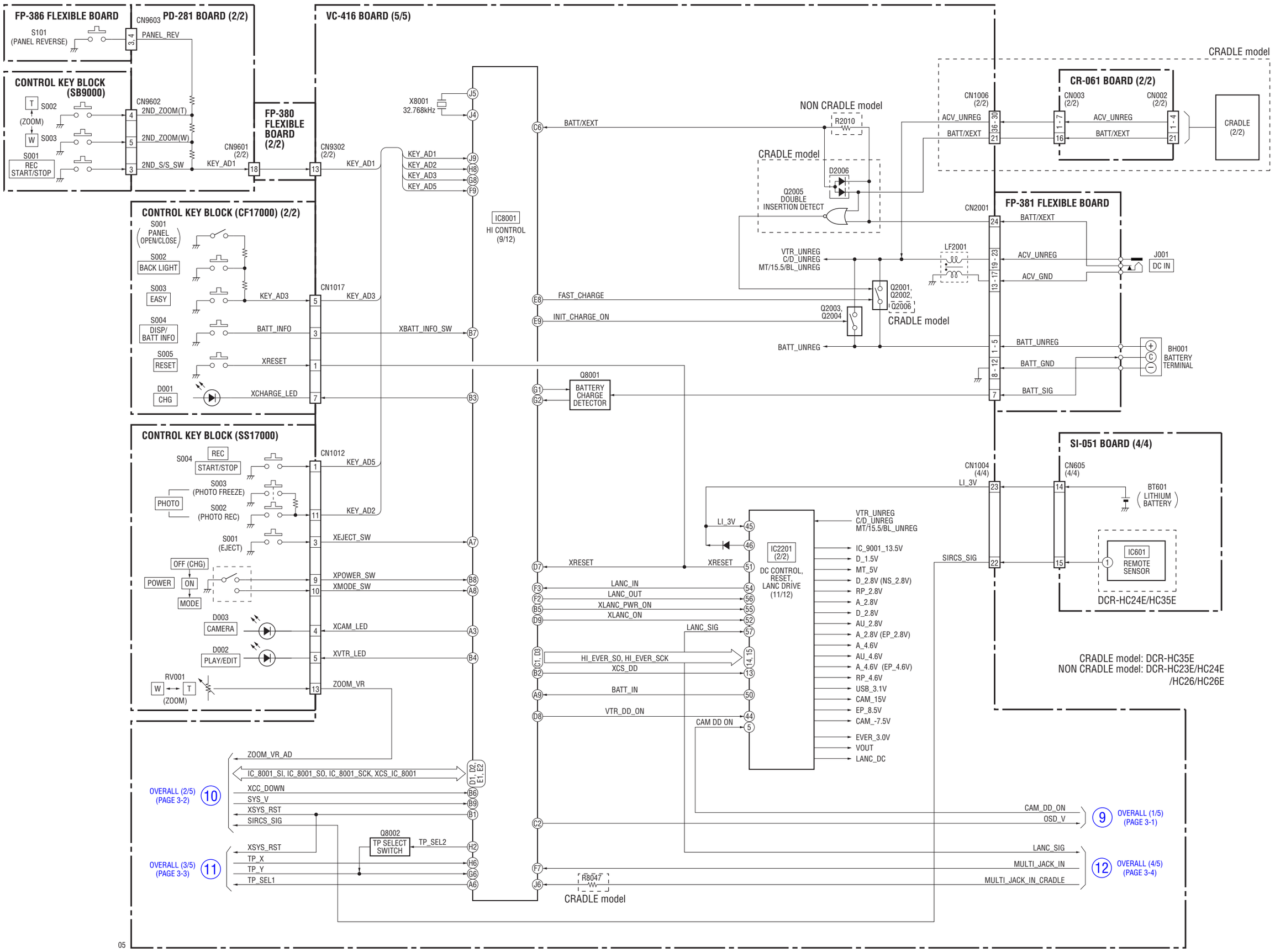
3-4. OVERALL BLOCK DIAGRAM (4/5)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



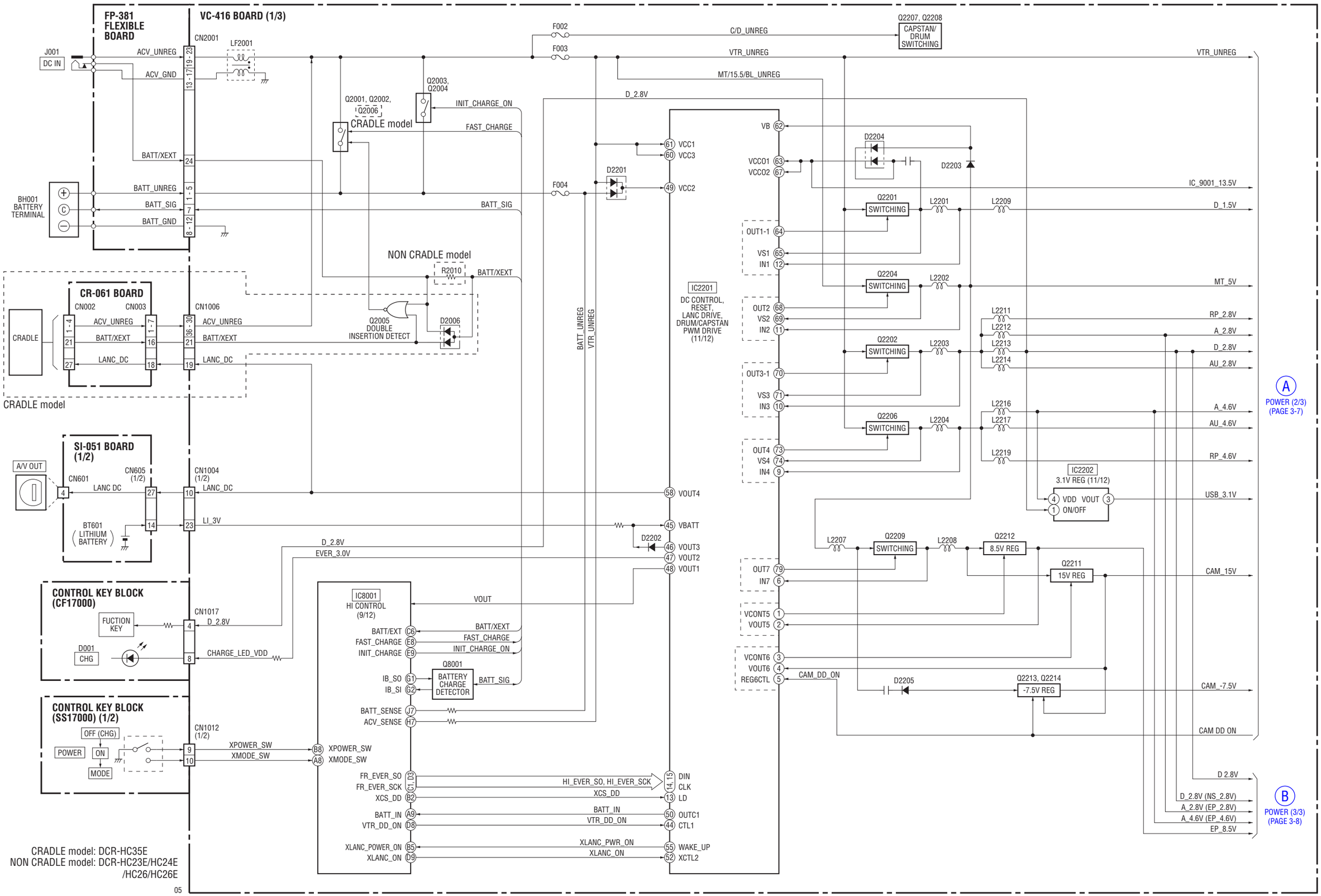
3-5. OVERALL BLOCK DIAGRAM (5/5)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



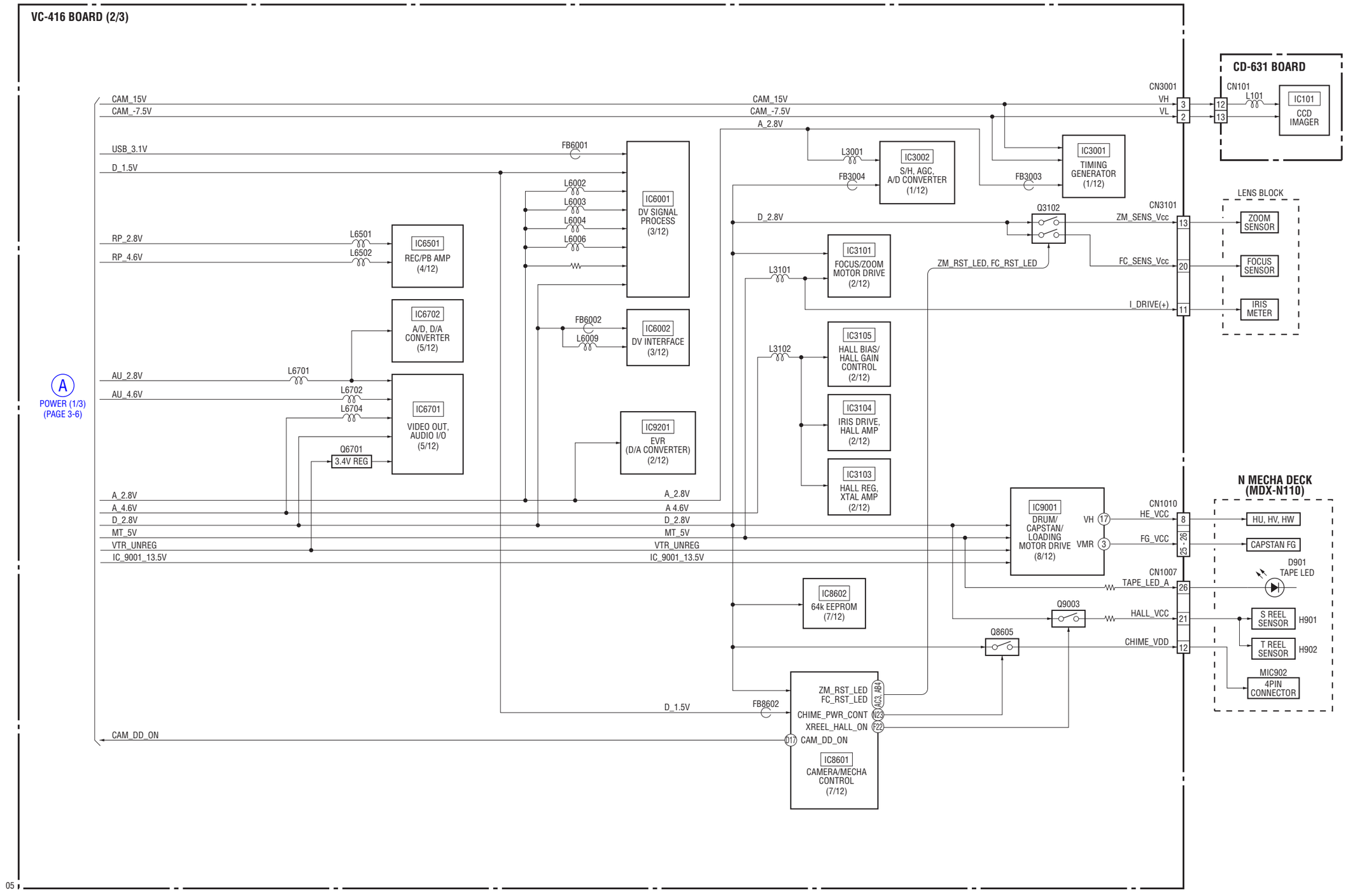
3-6. POWER BLOCK DIAGRAM (1/3)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



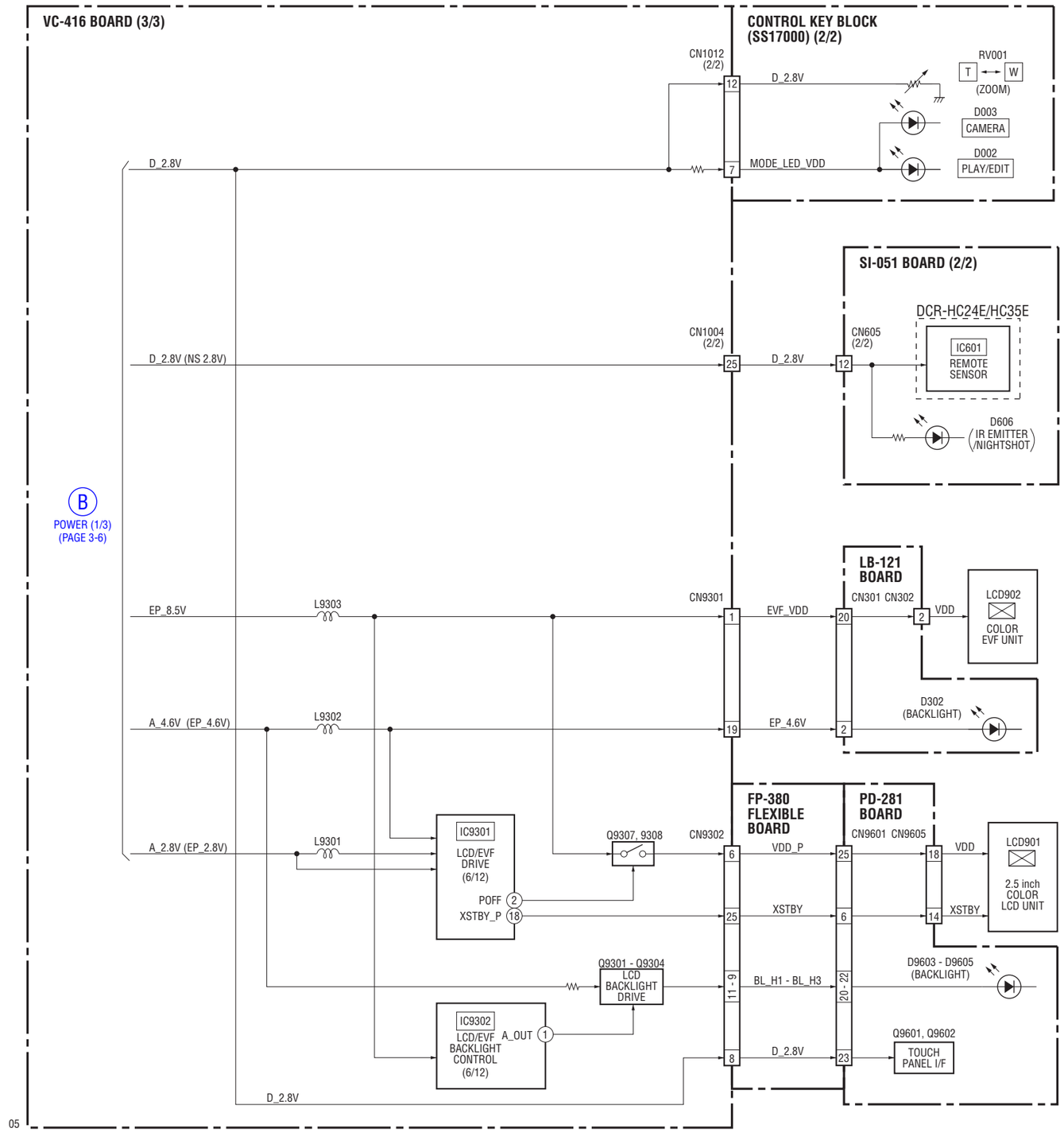
3-7. POWER BLOCK DIAGRAM (2/3)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



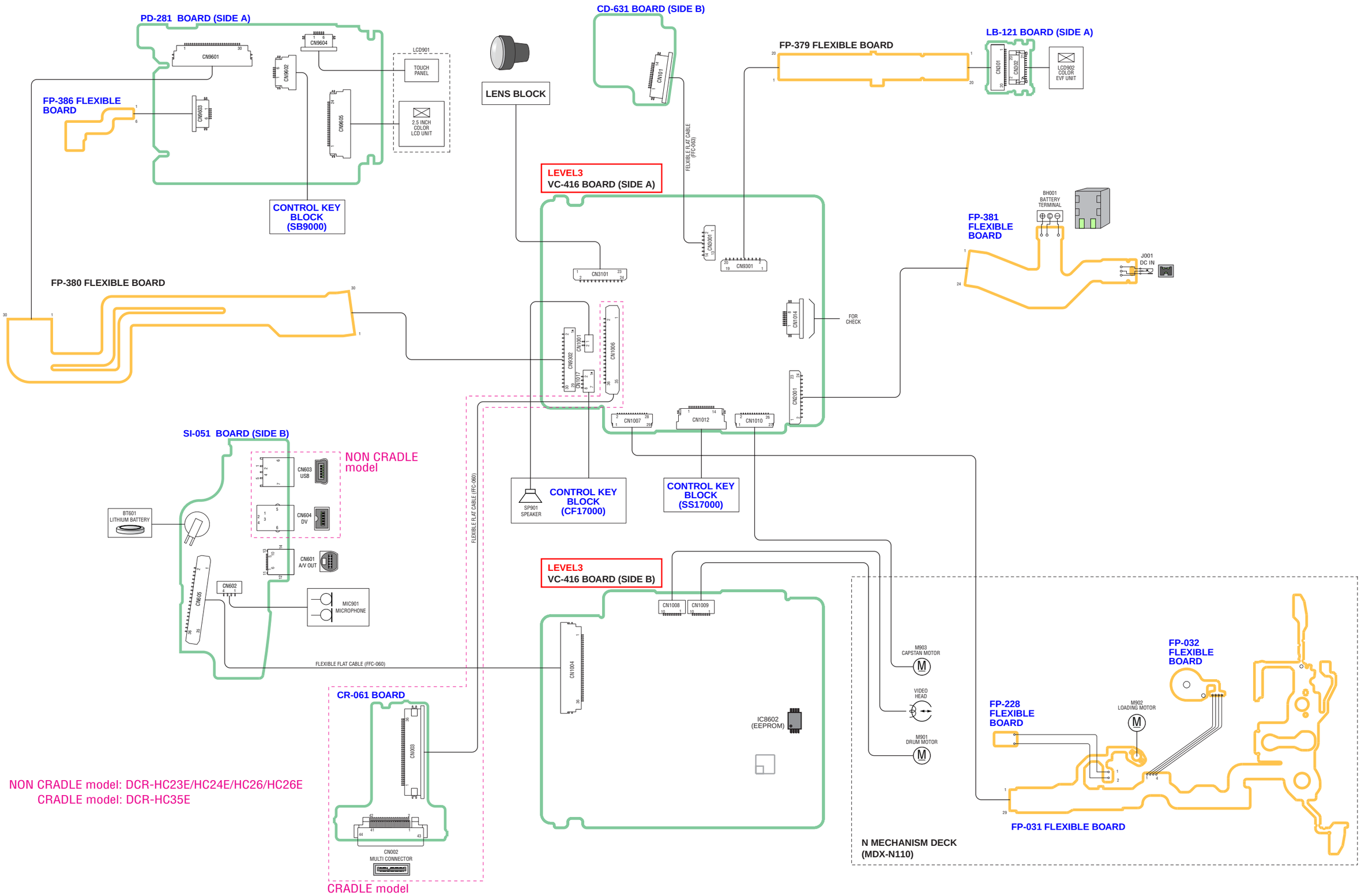
3-8. POWER BLOCK DIAGRAM (3/3)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



4-2. SCHEMATIC DIAGRAMS

Link

CD-631 BOARD (CCD IMAGER)	SI-051 BOARD (AV/DV/USB CONNECTOR)
PD-281 BOARD (LCD, LCD BACKLIGHT)	LB-121 BOARD (EVF, EVF BACKLIGHT)
FP-380 FLEXIBLE BOARD	FP-381 FLEXIBLE BOARD (DC IN)
FP-386 FLEXIBLE BOARD (PANEL REVERSE DETECT)	FP-031, FP-032, FP-228 FLEXIBLE BOARD
CONTROL KEY BLOCK (SB9000)	CONTROL KEY BLOCK (CF17000)
CR-061 BOARD (CRADLE TERMINAL)	CONTROL KEY BLOCK (SS17000)

COMMON NOTE FOR SCHEMATIC DIAGRAMS

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-2. SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. pF : μμF. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10 W unless otherwise noted. kΩ=1000 Ω, MΩ=1000 kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example	C541	L452
	22U	10UH
	TA A	2520
	Kinds of capacitor / Case size	External dimensions (mm)

- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- Parts with ★ differ according to the model/destination.
  Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- : B+ Line
- : B– Line
- : IN/OUT direction of (+,–) B LINE.
- : adjustment for repair.
- : not use circuit

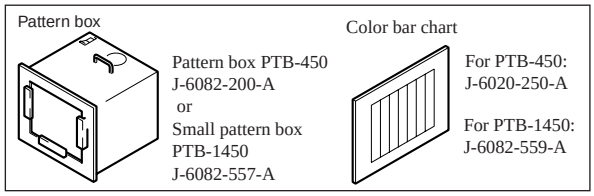
(Measuring conditions voltage and waveform)

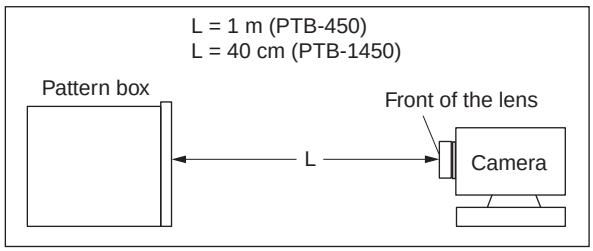
- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms.
  (VOM of DC 10 MΩ input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

Precautions for Replacement of Imager

- If the imager has been replaced, carry out all the adjustments for the camera section.
- As the imager may be damaged by static electricity from its structure, handle it carefully like for the MOS IC.
  In addition, ensure that the receiver is not covered with dusts nor exposed to strong light.

1. Connection





2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

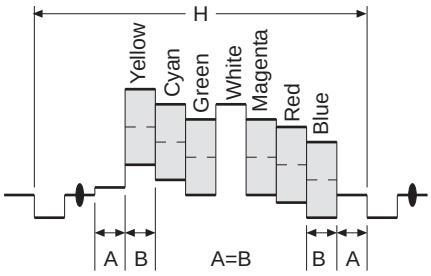


Fig. a (Video output terminal output waveform)

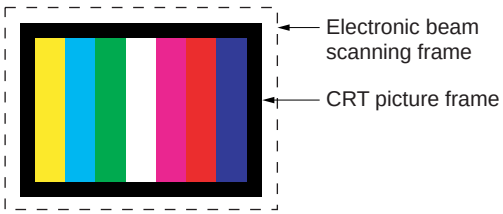


Fig.b (Picture on monitor TV)

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifie.

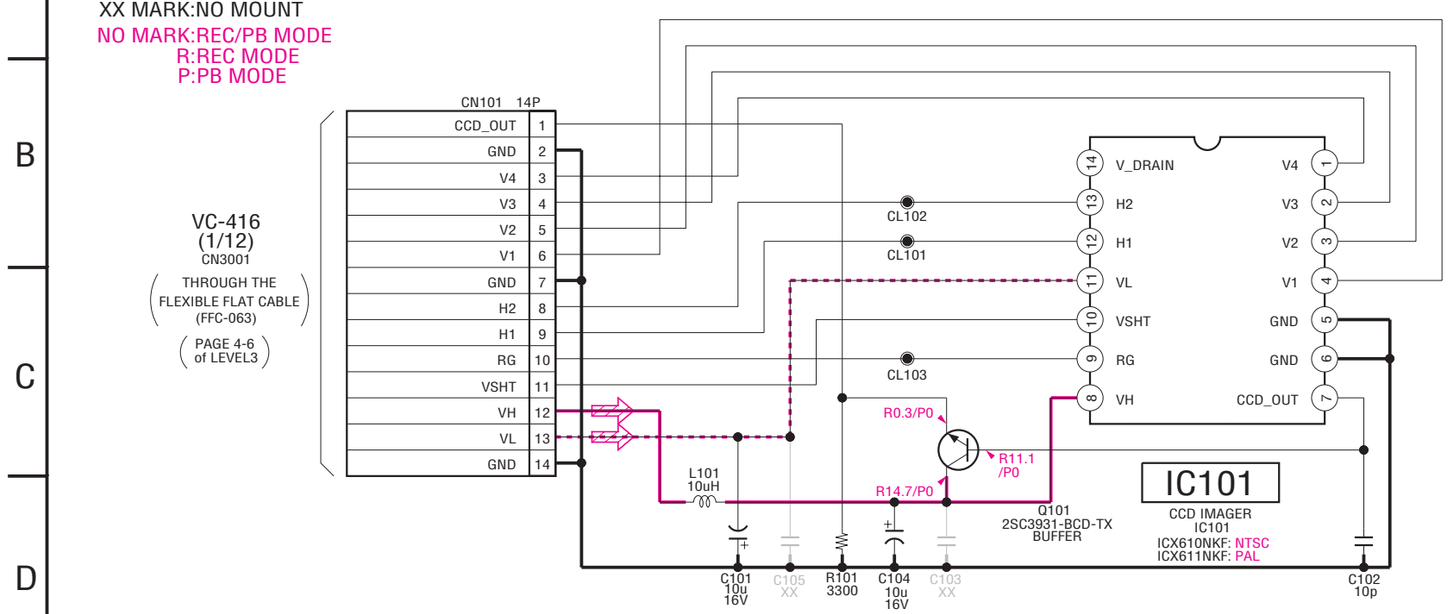
CD-631 BOARD

CCD IMAGER

XX MARK:NO MOUNT

NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE

Note: IC101 is not included in CD-631 complete board.
Note: Voltages of IC101 can not be measured, because this is mounted by side of the lens.



Schematic diagrams of the VC-416 board are not shown.
Pages from 4-6 to 4-17 are not shown.

PD-281 BOARD

LCD, LCD BACKLIGHT

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

FP-380 FLEXIBLE BOARD

(PRINTED WIRING BOARD is omitted.)

VC-416 (6/12) CN9302 (PAGE 4-11 of LEVEL3)

LND001	1	PANEL_VR	PANEL_VR	30	LND030
LND002	2	PANEL_VG	PANEL_VG	29	LND029
LND003	3	PANEL_VB	PANEL_VB	28	LND028
LND004	4	REG_GND	REG_GND	27	LND027
LND005	5	REG_GND	REG_GND	26	LND026
LND006	6	VDD_P	VDD_P	25	LND025
LND007	7	EP_2.8V(N.C.)	EP_2.8V(N.C.)	24	LND024
LND008	8	D_2.8V	D_2.8V	23	LND023
LND009	9	BL_H3	BL_H3	22	LND022
LND010	10	BL_H2	BL_H2	21	LND021
LND011	11	BL_H1	BL_H1	20	LND020
LND012	12	REG_GND	REG_GND	19	LND019
LND013	13	KEY_AD1	KEY_AD1	18	LND018
LND014	14	TP_X	TP_X	17	LND017
LND015	15	TP_SEL1	TP_SEL1	16	LND016
LND016	16	TP_Y	TP_Y	15	LND015
LND017	17	REF	REF	14	LND014
LND018	18	WIDE	WIDE	13	LND013
LND019	19	HCK1	HCK1	12	LND012
LND020	20	HCK2	HCK2	11	LND011
LND021	21	HST	HST	10	LND010
LND022	22	PCG	PCG	9	LND009
LND023	23	EN	EN	8	LND008
LND024	24	PSIG	PSIG	7	LND007
LND025	25	XSTBY	XSTBY	6	LND006
LND026	26	DWN	DWN	5	LND005
LND027	27	RGT	RGT	4	LND004
LND028	28	VST	VST	3	LND003
LND029	29	VCK	VCK	2	LND002
LND030	30	COM	COM	1	LND001

CONTROL KEY BLOCK (SB9000)

CONTROL KEY BLOCK (SB9000) is replaced as block, so that PRINTED WIRING BOARD is omitted.

S001 REC START/STOP

S002 T

(ZOOM)

S003 W

1	REG_GND	LND006
2	N.C.	LND005
3	2ND_S/S_SW	LND004
4	2ND_ZOOM(T)	LND003
5	2ND_ZOOM(W)	LND002
6	REG_GND	LND001

FP-386 FLEXIBLE BOARD

PANEL REVERSE DETECT

S101 (PANEL REVERSE)

1	REG_GND	LND101
2	N.C.	LND102
3	PANEL_REV	LND103
4	PANEL_REV	LND104
5	N.C.	LND105
6	REG_GND	LND106

CN9601 30P

PANEL_VR	30	VR_P
PANEL_VG	29	VG_P
PANEL_VB	28	VB_P
REG_GND	27	
REG_GND	26	
VDD_P	25	
EP_2.8V(N.C.)	24	
D_2.8V	23	
BL_H3	22	
BL_H2	21	
BL_H1	20	
REG_GND	19	
KEY_AD1	18	
TP_X	17	
TP_SEL1	16	
TP_Y	15	
REF	14	REF_P
WIDE	13	WIDE_P
HCK1	12	HCK1_P
HCK2	11	HCK2_P
HST	10	HST_P
PCG	9	PCG_P
EN	8	EN_P
PSIG	7	VP_P
XSTBY	6	XSTBY_P
DWN	5	DWN_P
RGT	4	RGT_P
VST	3	VST_P
VCK	2	VCK_P
COM	1	COM_P

CN9602 6P

REG_GND	1	
N.C	2	
2ND_S/S_SW	3	
2ND_ZOOM(T)	4	
2ND_ZOOM(W)	5	
REG_GND	6	

CN9603 6P

REG_GND	1	
N.C	2	
PANEL_REV	3	
PANEL_REV	4	
N.C	5	
REG_GND	6	

CN9604 6P

TP_BOT	6	
TP_L	5	
N.C.	4	
TP_TOP	3	
TP_R	2	
N.C.	1	

LCD901 (2/2) TOUCH PANEL (with LCD UNIT)

LND901 CH_GND

R9602 1200

R9603 1500

R9604 2200

D9601 XX

Q9601 XP421F-TXE

Q9602 XP411F-TXE

Q9601, Q9602 TOUCH PANEL I/F

R9605 XX

C9601 XX

C9602 XX

R9611 XX

C9603 0.0022u

C9604 XX

R9606 XX

Q9603 XX

C9605 1u

D9602 MAZS056008S0

R9607 1M

C9606 0.1u

D9603 NSSW008CT-T071

D9604 NSSW008CT-T071

D9605 NSSW008CT-T071

R9608 XX

R9609 XX

R9610 XX

D9606 XX

D9607 XX

D9608 XX

D9603, D9604, D9605 (BACKLIGHT)

CN9605 24P

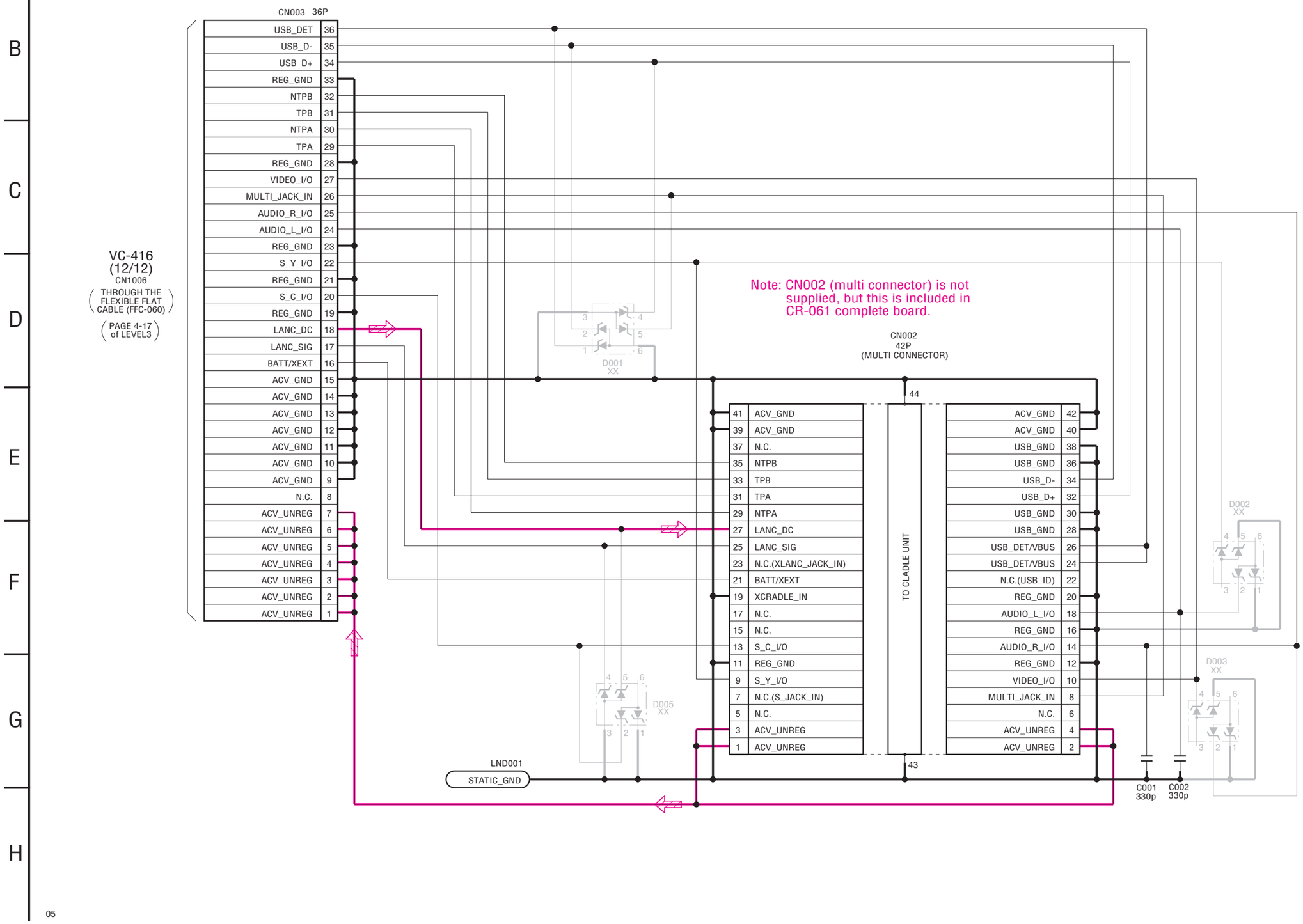
COM_P	24	COM
VST_P	23	CS
VCK_P	22	VST
EN_P	21	VCK
DWN_P	20	EN
	19	DWN
	18	VDD
	17	VSS
	16	N.C.
	15	VSSG
XSTBY_P	14	XSTBY
PCG_P	13	PCG
HST_P	12	HST
REF_P	11	REF
	10	TEST1
WIDE_P	9	WIDE
HCK2_P	8	HCK2
HCK1_P	7	HCK1
VP_P	6	PSIG
VG_P	5	G
VR_P	4	R
VB_P	3	B
RGT_P	2	RGT
	1	TEST2

LCD901 (1/2) 2.5 INCH COLOR LCD UNIT (with TOUCH PANEL)

CR-061 BOARD :DCR-HC35E

CRADLE TERMINAL

XX MARK:NO MOUNT



• Refer to page 4-3 for mark ⚠.

SI-051 BOARD

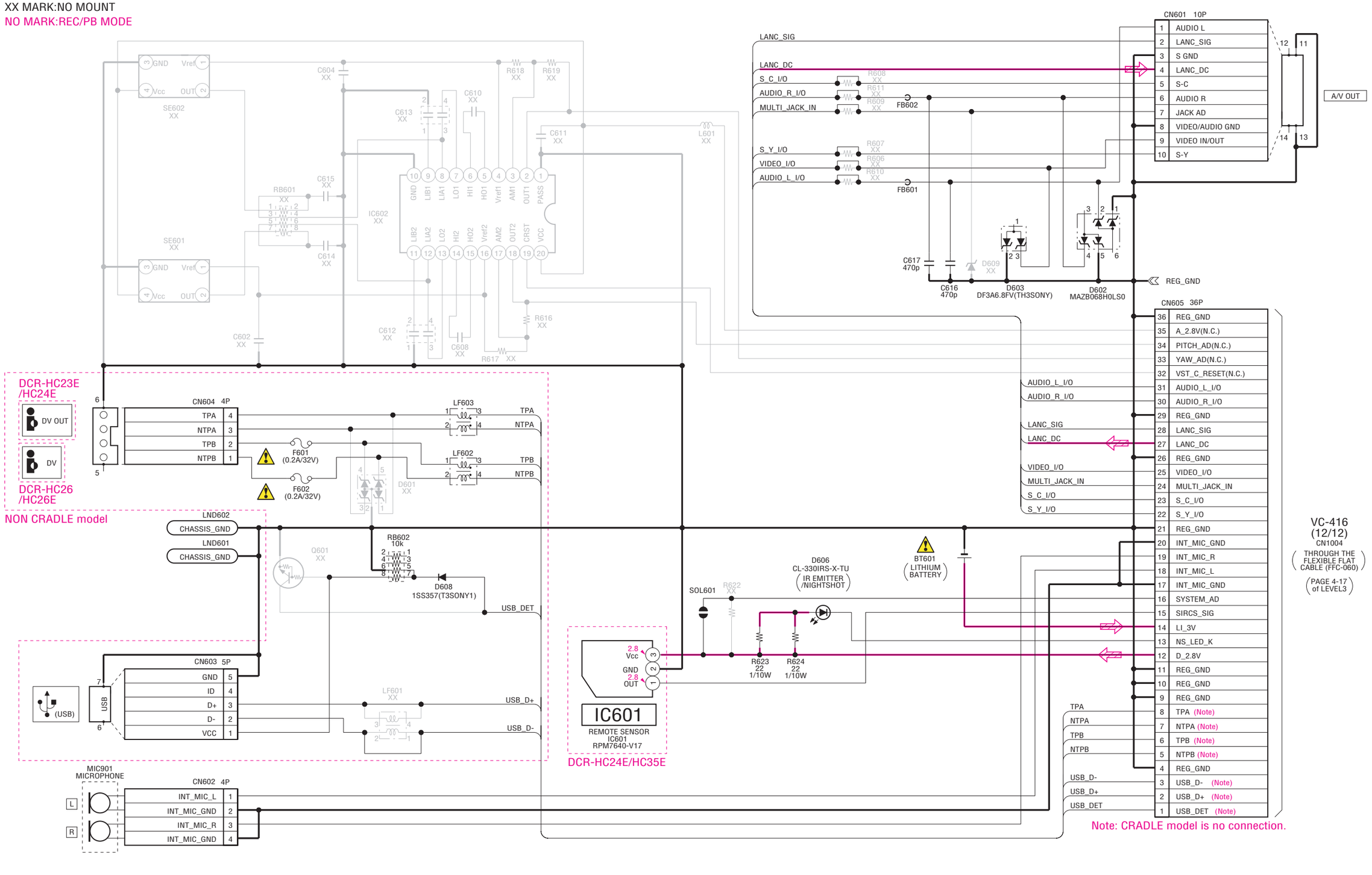
AV/DV/USB CONNECTOR

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

NON CRADLE model:DCR-HC23E/HC24E/HC26/HC26E
CRADLE model:DCR-HC35E

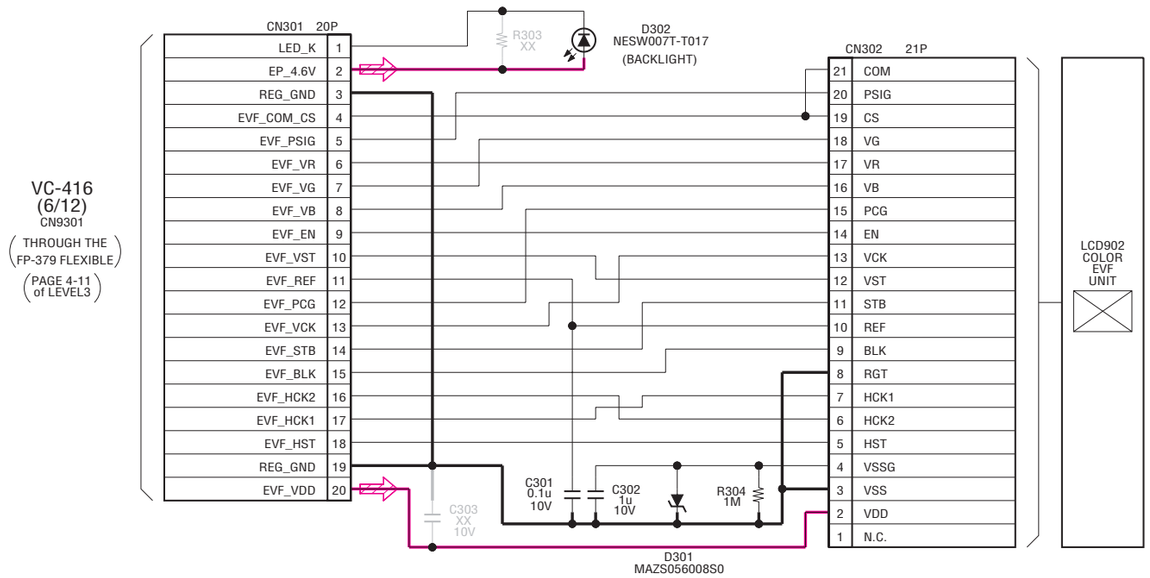
Note: IC601 is not included in SI-051 complete board.



LB-121 BOARD

EVF, EVF BACKLIGHT

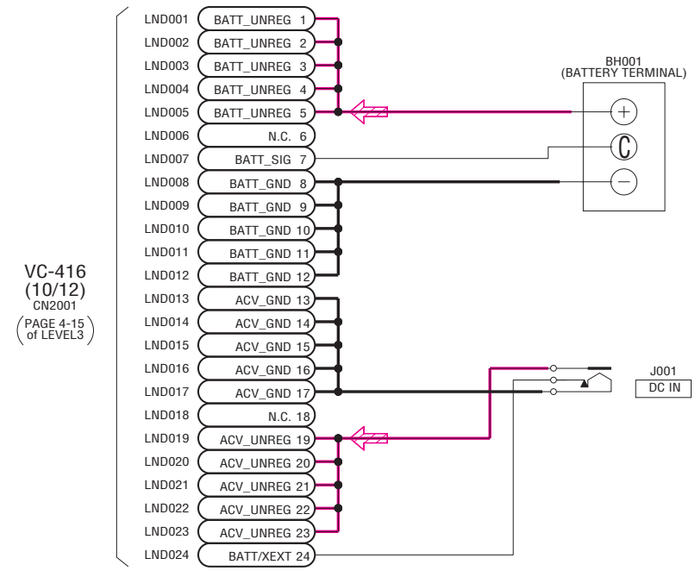
XX MARK:NO MOUNT

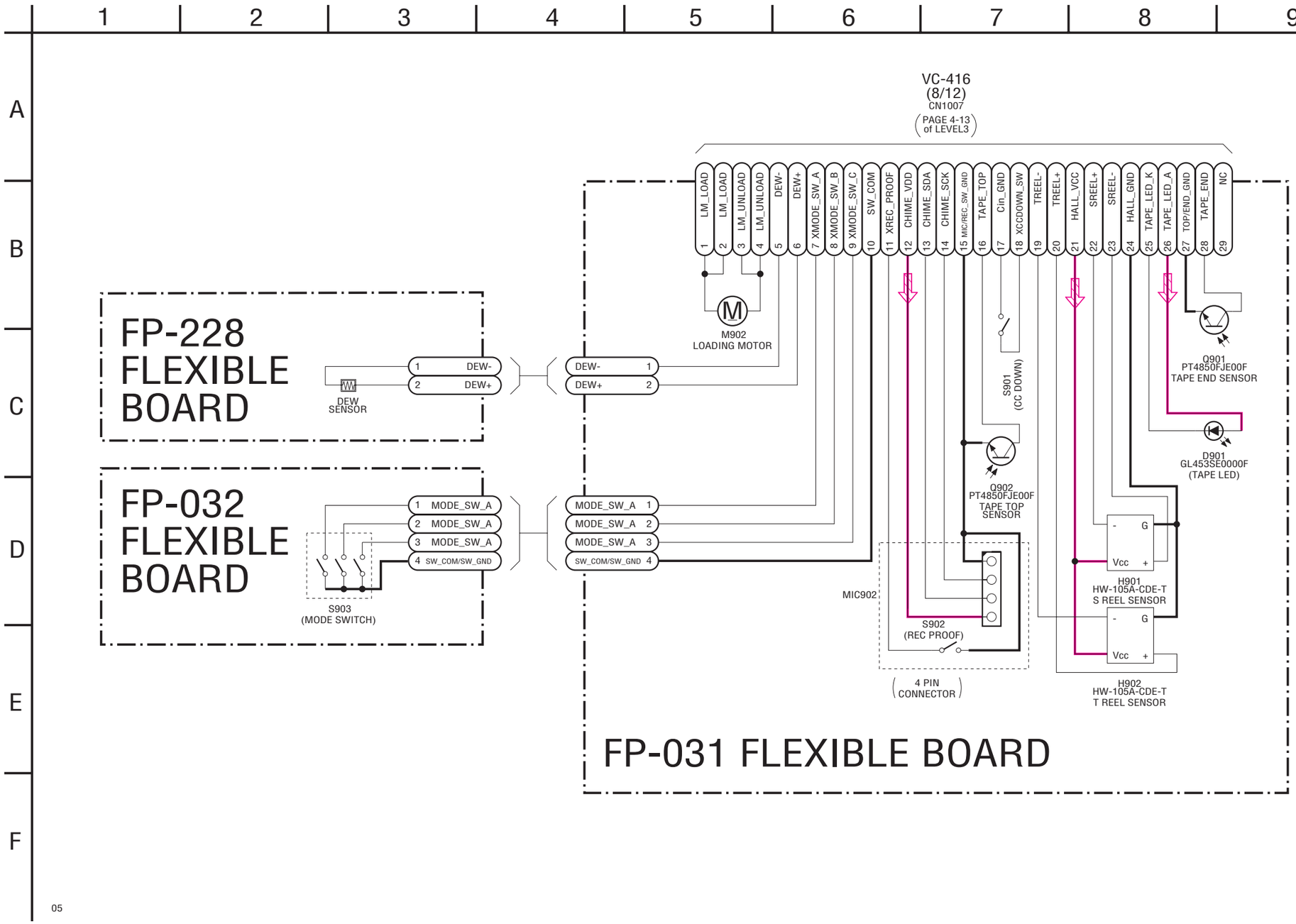


FP-381 FLEXIBLE BOARD

DC IN

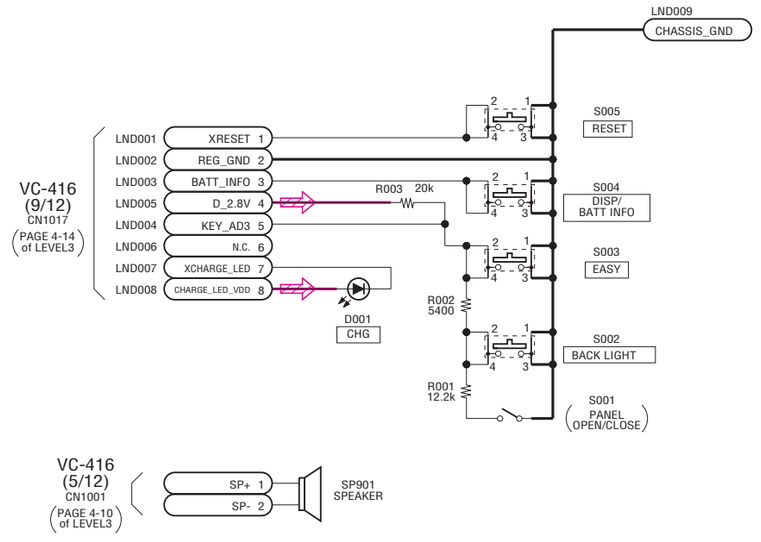
Note: BH001 and J001 are not included in FP-381 flexible board.




1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
VC-416
(8/12)
CN1007
PAGE 4-13
of LEVEL3
1 LM_LOAD
2 LM_LOAD
3 LM_UNLOAD
4 LM_UNLOAD
5 DEW-
6 DEW+
7 XMODE_SW_A
8 XMODE_SW_B
9 XMODE_SW_C
10 SW_COM
11 XREC_PROOF
12 CHIME_VDD
13 CHIME_SDA
14 CHIME_SCK
15 MIC/REC_SW_GND
16 TAPE_TOP
17 Cin_GND
18 XCCDOWN_SW
19 TREEL-
20 TREEL+
21 HALL_VCC
22 SREEL+
23 SREEL-
24 HALL_GND
25 TAPE_LED_K
26 TAPE_LED_A
27 TOP/END_GND
28 TAPE_END
29 NC
M902
LOADING MOTOR
S901
(CC DOWN)
Q901
PT4850FJE00F
TAPE END SENSOR
D901
GL453SE0000F
(TAPE LED)
Q902
PT4850FJE00F
TAPE TOP
SENSOR
H901
HW-105A-CDE-T
S REEL SENSOR
H902
HW-105A-CDE-T
T REEL SENSOR
S902
(REC PROOF)
4 PIN
CONNECTOR
MIC902
FP-228
FLEXIBLE
BOARD
1 DEW-
2 DEW+
DEW
SENSOR
DEW- 1
DEW+ 2
FP-032
FLEXIBLE
BOARD
1 MODE_SW_A
2 MODE_SW_A
3 MODE_SW_A
4 SW_COM/SW_GND
S903
(MODE SWITCH)
MODE_SW_A 1
MODE_SW_A 2
MODE_SW_A 3
SW_COM/SW_GND 4
FP-031 FLEXIBLE BOARD
05

CONTROL KEY BLOCK (CF17000)

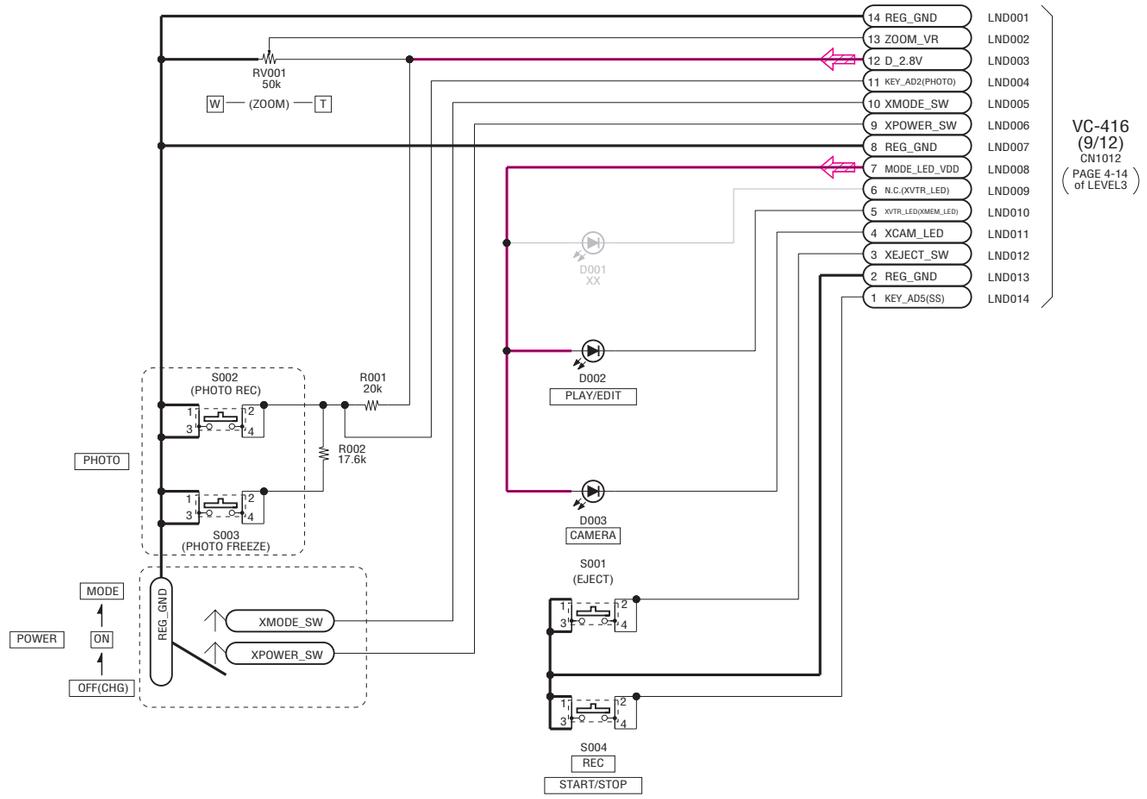
(CONTROL KEY BLOCK (CF17000) is replaced as block, so that PRINTED WIRING BOARD is omitted.)



05

CONTROL KEY BLOCK (SS17000)

(CONTROL KEY BLOCK (SS17000) is replaced as block, so that PRINTED WIRING BOARD is omitted.)



05

4-3. PRINTED WIRING BOARDS

Link

- CD-631 BOARD
- SI-051 BOARD
- PD-281 BOARD (SIDE A)
- LB-121 BOARD
- PD-281 BOARD (SIDE B)
- FP-381 FLEXIBLE BOARD
- FP-386 FLEXIBLE BOARD
- FP-031, FP-032, FP-228 FLEXIBLE BOARD
- CR-061 BOARD
- COMMON NOTE FOR PRINTED WIRING BOARDS
- MOUNTED PARTS LOCATION

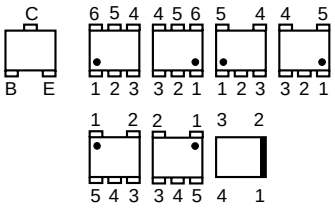
4-3. PRINTED WIRING BOARDS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS

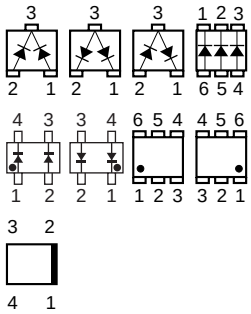
- : Uses unleaded solder.
- : Circuit board
  : Flexible board
  Pattern from the side which enables seeing.
  : pattern of the rear side
  (The other layers' patterns are not indicated)
- Through hole is omitted.
- There are a few cases that the part printed on diagram isn't mounted in this model.
- : panel designation

- Chip parts.

Transistor



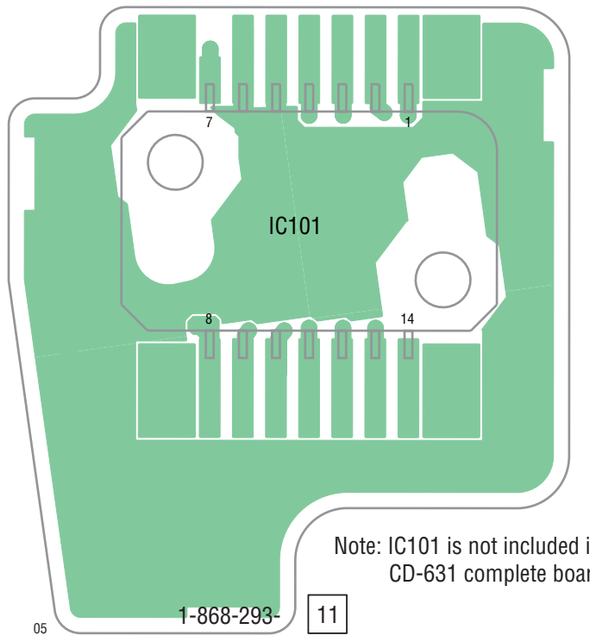
Diode



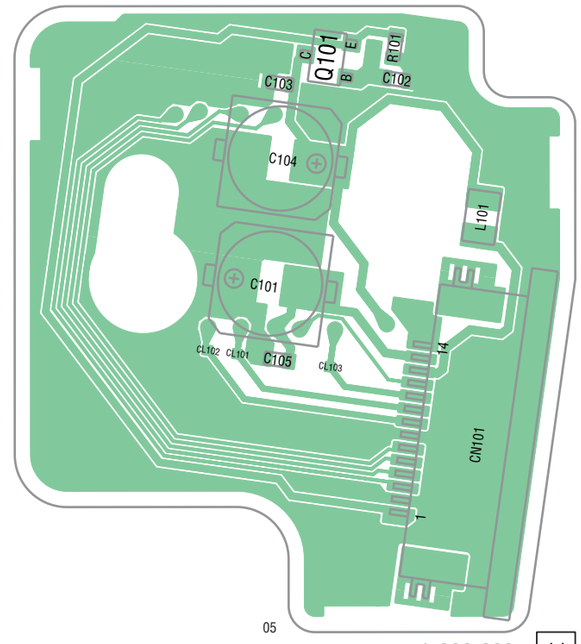
CD-631 (2 layers)

: Uses unleaded solder.

CD-631 BOARD (SIDE A)



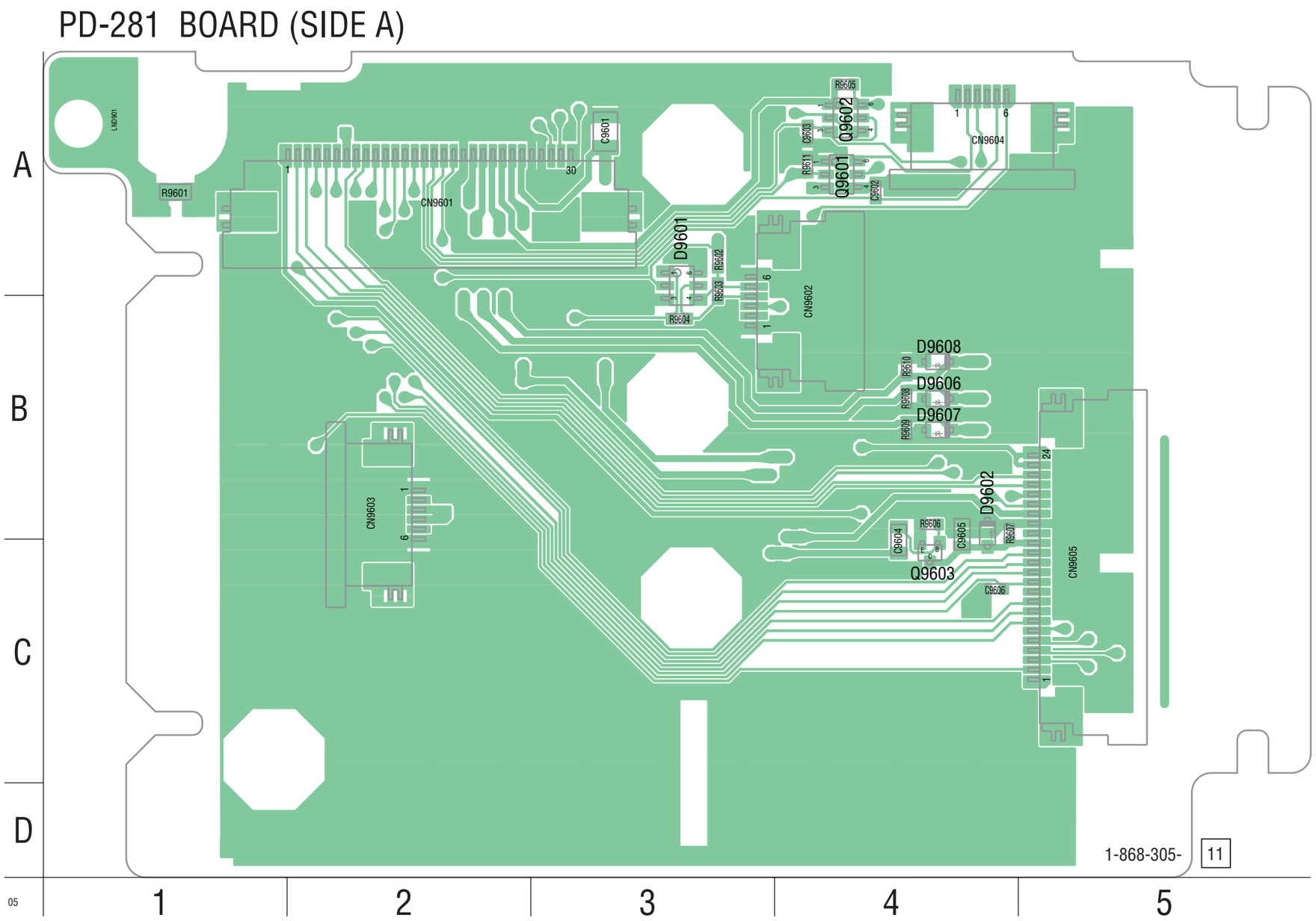
CD-631 BOARD (SIDE B)



Printed wiring boards of the VC-416 board are not shown.
Pages from 4-28 to 4-29 are not shown.

PD-281 (2 layers)

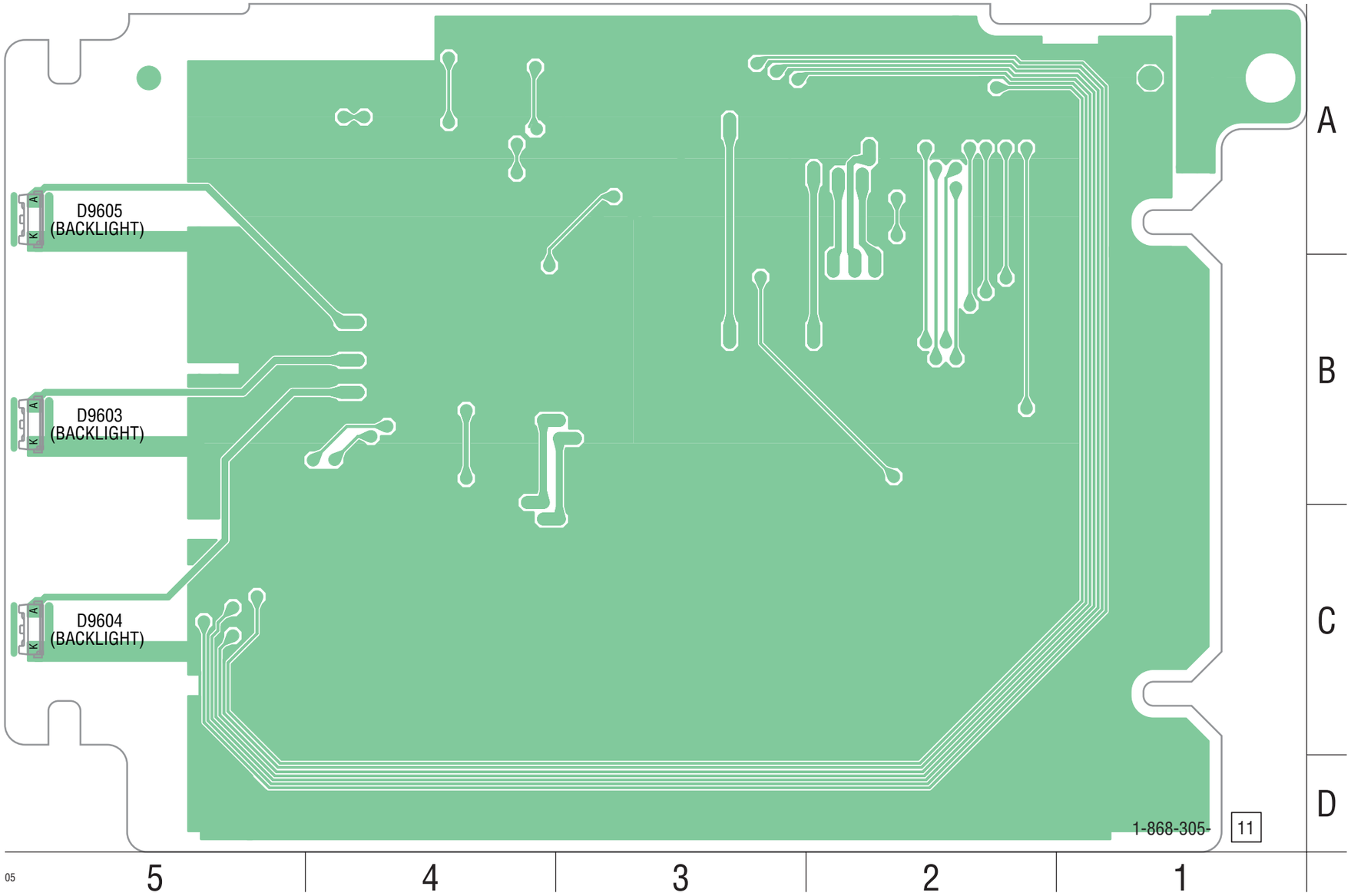
: Uses unleaded solder.



PD-281 (2 layers)

: Uses unleaded solder.

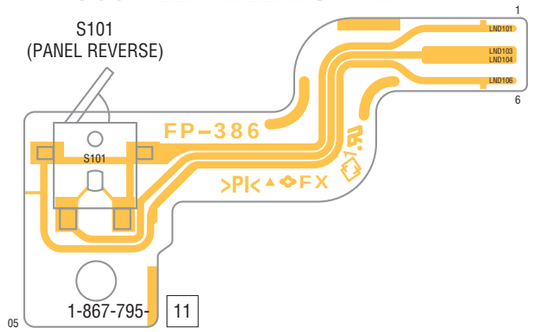
PD-281 BOARD (SIDE B)



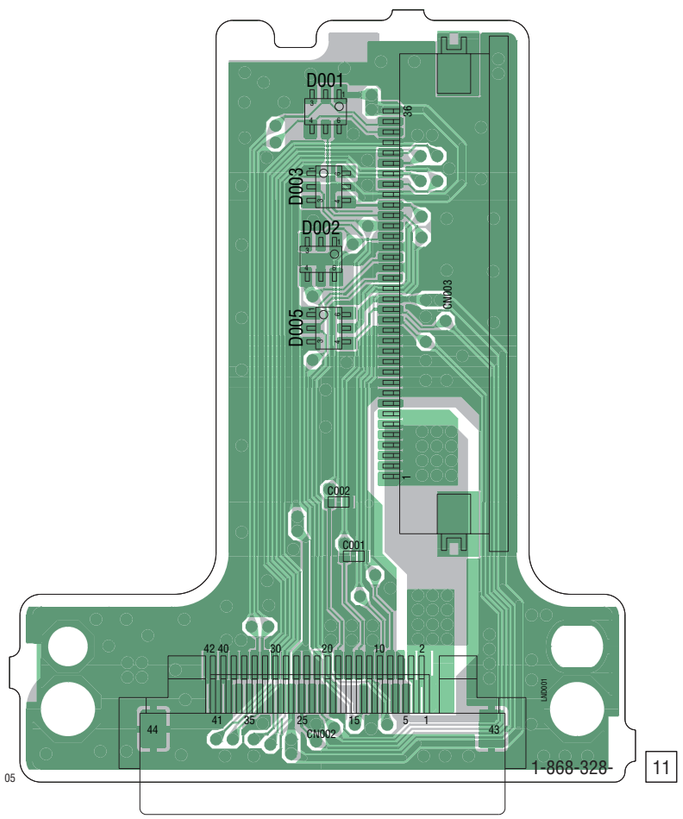
FP-386 (1 layer), CR-061 (2 layers), SI-051 (2 layers)

: Uses unleaded solder.

FP-386 FLEXIBLE BOARD

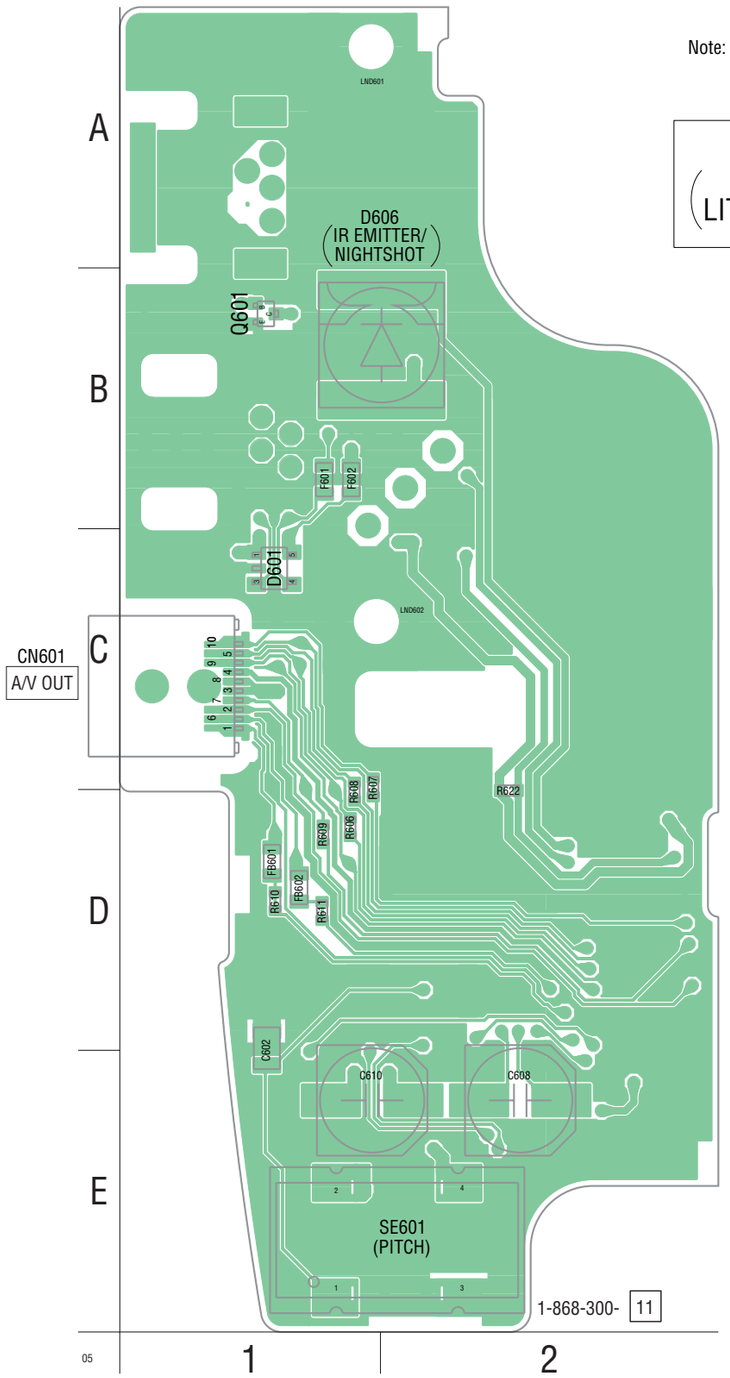


CR-061 BOARD



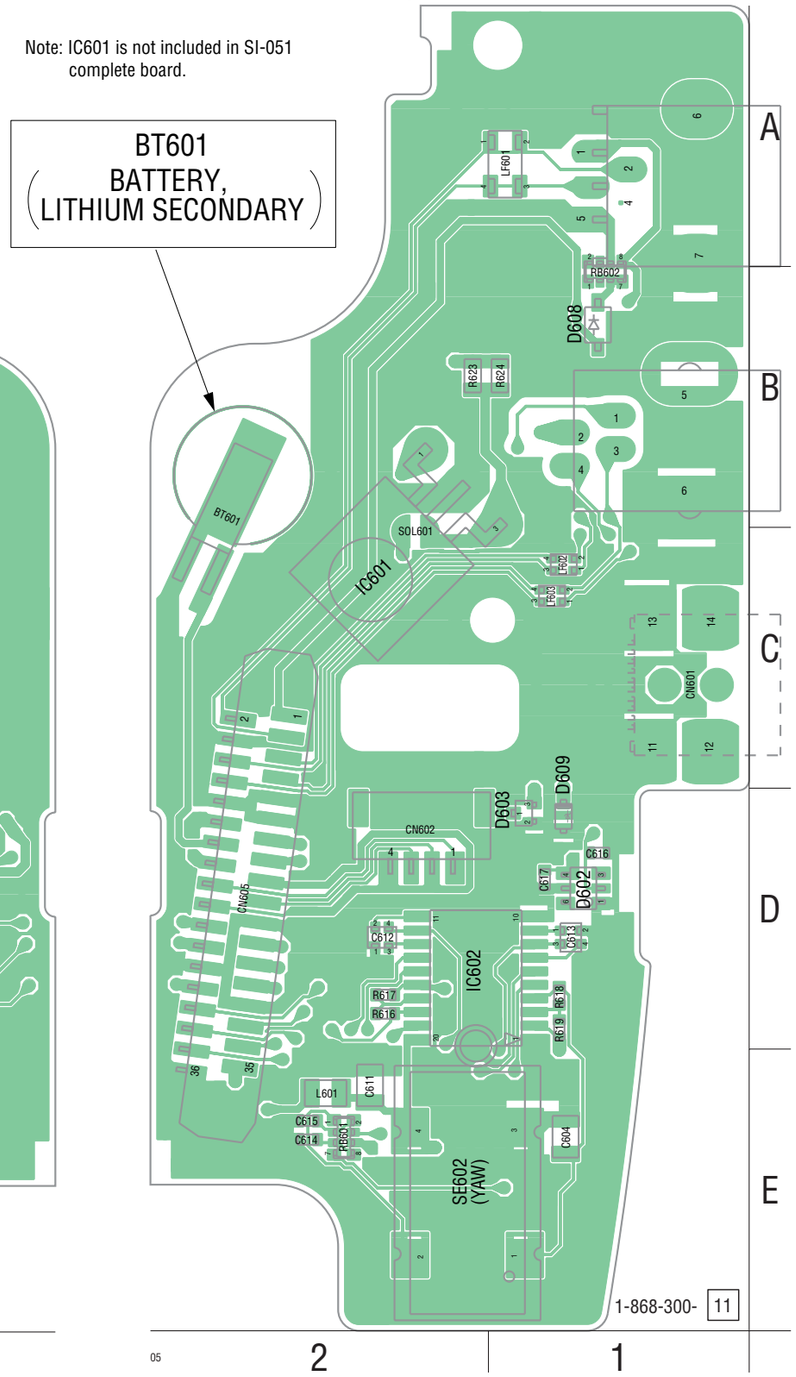
Note: CN002 (multi connector) is not supplied,
but this is included in CR-061 complete board.

SI-051 BOARD (SIDE A)



SI-051 BOARD (SIDE B)

Note: IC601 is not included in SI-051
complete board.

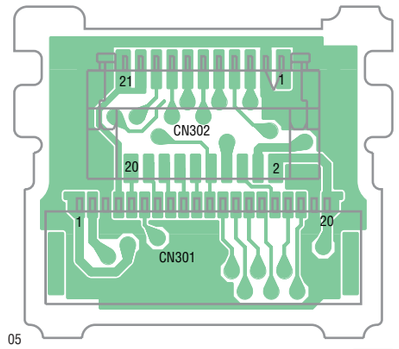


CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

LB-121 (2 layers), FP-381 (1 layer)

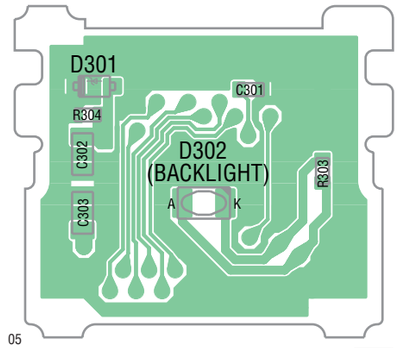
: Uses unleaded solder.

LB-121 BOARD (SIDE A)



1-868-308- 11

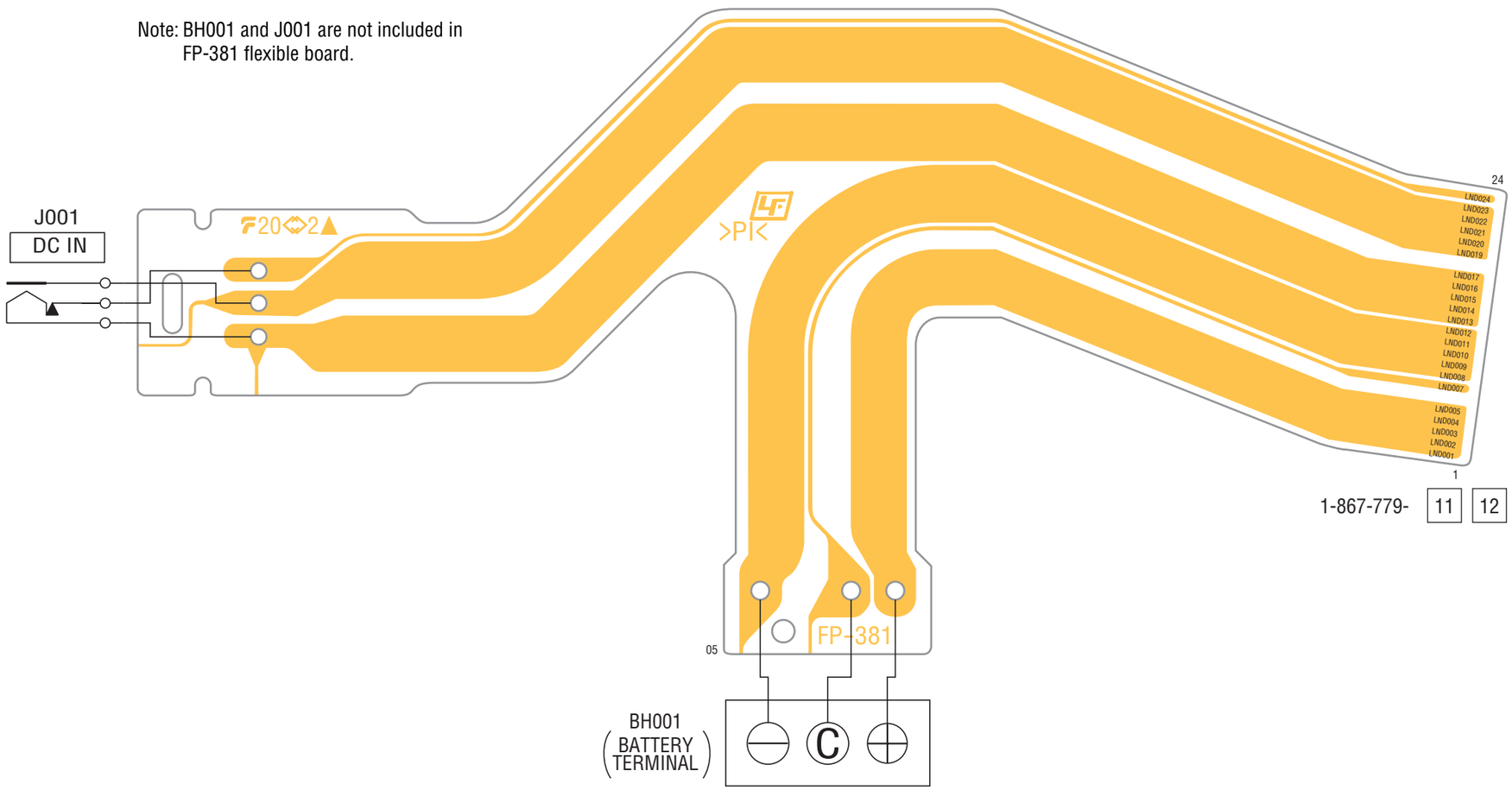
LB-121 BOARD (SIDE B)



1-868-308- 11

FP-381 FLEXIBLE BOARD

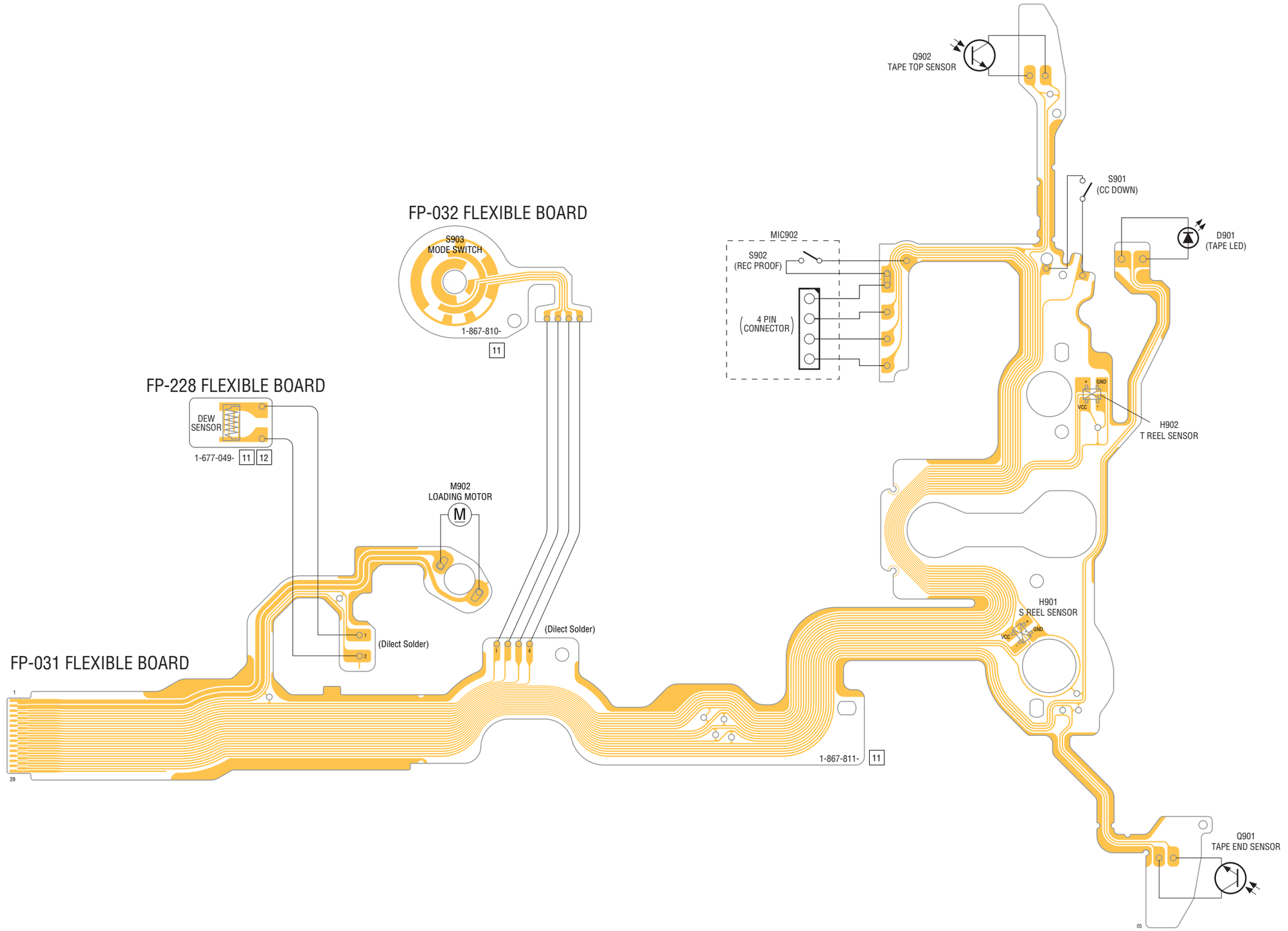
Note: BH001 and J001 are not included in FP-381 flexible board.



1-867-779- 11 12

FP-031 (1 layer), FP-032 (1 layer), FP-228 (1 layer)

: Uses unleaded solder.



Mounted parts location of the VC-416 board are not shown.
Page 4-35 to 4-36 are not shown.

4-4. MOUNTED PARTS LOCATION

no mark : side A
* mark : side B

PD-281 BOARD

	C9603	A-4
	C9605	B-4
	C9606	C-4
	CN9601	A-2
	CN9602	B-4
	CN9603	B-2
	CN9604	A-4
	CN9605	C-5
	D9602	B-4
*	D9603	B-5
*	D9604	C-5
*	D9605	A-5
	Q9601	A-4
	Q9602	A-4
	R9602	A-3
	R9603	A-3
	R9604	B-3
	R9607	B-4

SI-051 BOARD

*	BT601	B-2
*	C616	D-1
*	C617	D-1
	CN601	C-1
*	CN603	A-1
*	CN604	B-1
*	CN605	D-2
*	D602	D-1
*	D603	D-1
	D606	B-1
*	D608	B-1
	F601	B-1
	F602	B-1
	FB601	D-1
	FB602	D-1
*	IC601	C-2
*	LF602	C-1
*	LF603	C-1
*	R623	B-2
*	R624	B-1
*	RB602	B-1

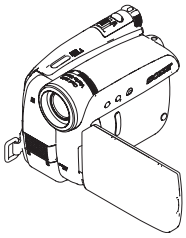
NOTE

5. REPAIR PARTS LIST

NOTE: Characters A to Z of the electrical parts list indicate location of exploded views in which the desired part is shown.

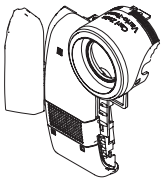
Link

EXPLODED VIEWS



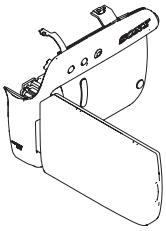
A

OVERALL ASSEMBLY



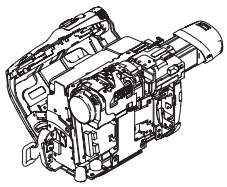
B

FRONT PANEL BLOCK



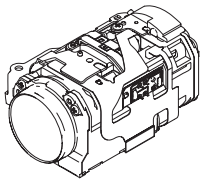
C

CABINET (R) BLOCK



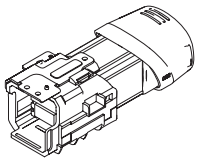
D

MAIN BLOCK-1



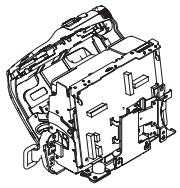
E

LENS BLOCK



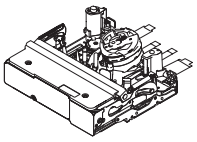
F

EVF BLOCK



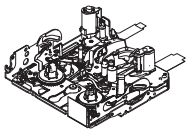
G

MAIN BLIOCK-2



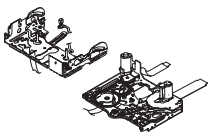
H

MECHANISM DECK SECTION



I

LS/MECHANICHAL CHASSIS BLOCK ASSEMBLY-1



J

LS/MECHANICHAL CHASSIS BLOCK ASSEMBLY-2

Link

ELECTRICAL PARTS LIST

ACCESSORIES

CD-631 BOARD E	FP-228 FLEXIBLE BOARD J	LB-121 BOARD F
CR-061 BOARD G	FP-380 FLEXIBLE BOARD C	PD-281 BOARD C
FP-031 FLEXIBLE BOARD J	FP-381 FLEXIBLE BOARD D	SI-051 BOARD B
FP-032 FLEXIBLE BOARD J	FP-386 FLEXIBLE BOARD C	

5. REPAIR PARTS LIST

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- CAPACITORS:
  uF: µF
- COILS
  uH: µH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

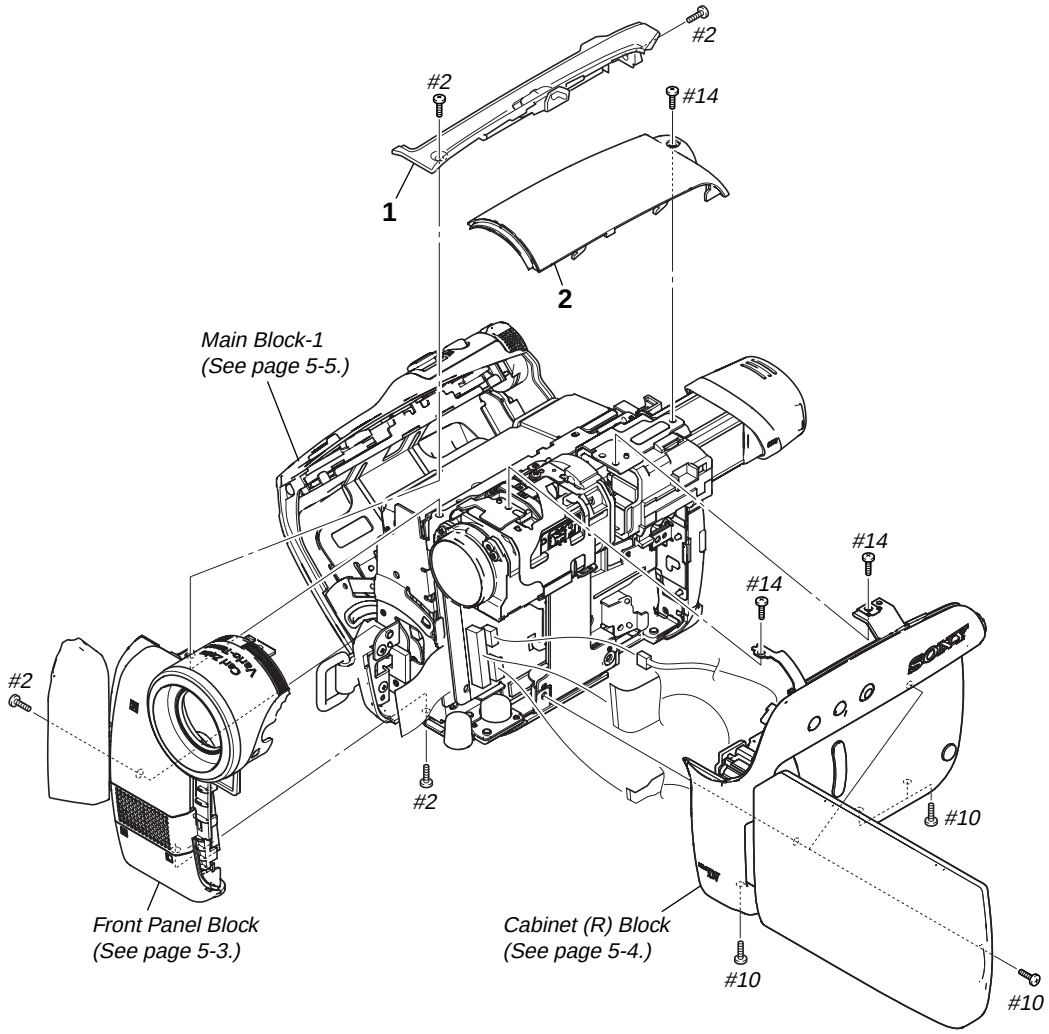
- Abbreviation
  AR : Argentine model
  AUS : Australian model
  BR : Brazilian model
  CH : Chinese model
  CND : Canadian model
  EE : East European model
  HK : Hong Kong model
  J : Japanese model
  JE : Tourist model
  KR : Korea model
  NE : North European model

5. REPAIR PARTS LIST

DISASSEMBLY HARDWARE LIST

5-1. EXPLODED VIEWS

5-1-1. OVERALL ASSEMBLY



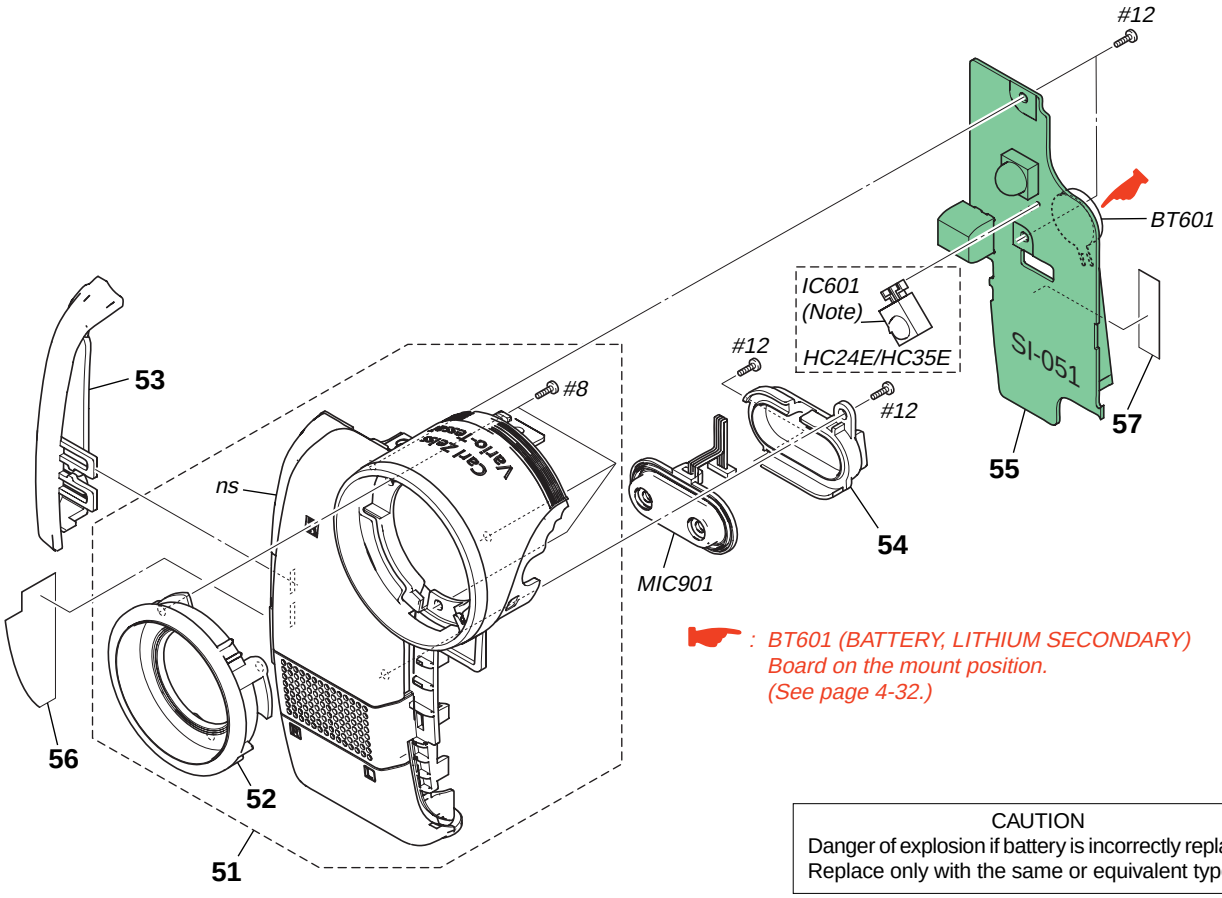
Ref. No.	Part No.	Description
1	X-2108-030-1	CABINET (172) ASSY, NS
2	2-664-983-11	CABINET (UPPER (172)) (HC24E/HC26/HC26E/HC35E)
2	2-664-983-21	CABINET (UPPER (172)) (HC23E)

Ref. No.	Part No.	Description
#2	2-635-562-31	SCREW (M1.7) (Black)
#10	2-599-475-31	SCREW (M1.7) (Silver)
#14	2-599-475-11	SCREW (M1.7) (Silver)

HARDWARE LIST

5-1-2. FRONT PANEL BLOCK

ns: not supplied



: BT601 (BATTERY, LITHIUM SECONDARY) Board on the mount position. (See page 4-32.)

CAUTION
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.

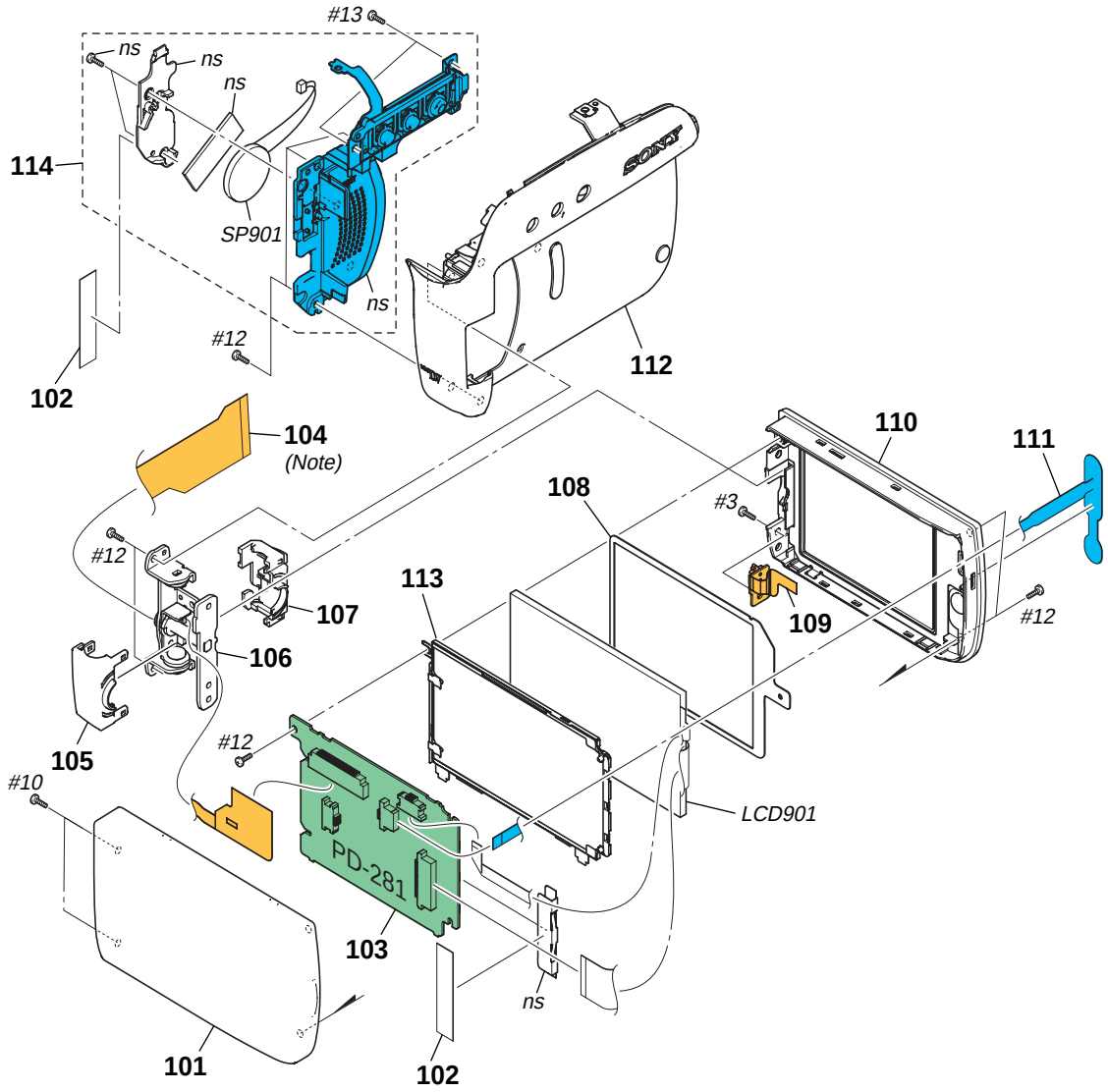
Note: IC601 is not included in SI-051 complete board.

- Refer to page 5-1 for mark ⚠.

Ref. No.	Part No.	Description
51	X-2108-154-1	PANEL (170) ASSY, F (HC23E)
51	X-2108-155-1	PANEL (17R) ASSY, F (HC24E)
51	X-2108-156-1	PANEL (171) ASSY, F (HC26/HC26E)
51	X-2108-157-1	PANEL (17C) ASSY, F (HC35E)
52	2-664-940-01	SCREW (172), FILTER
53	2-664-986-01	COVER, JACK
* 54	2-664-946-01	RETAINER, MICROPHONE
55	A-1153-836-A	SI-051 BOARD, COMPLETE (HC23E/HC24E/HC26/HC26E)
55	A-1153-837-A	SI-051 BOARD, COMPLETE (HC35E)
* 56	2-672-995-01	SHEET (F)
57	3-941-343-01	TAPE (A)
⚠* BT601	1-756-640-11	BATTERY, LITHIUM SECONDARY
* IC601	6-600-505-01	IC RPM7640-V17 (HC24E/HC35E) (Note)
MIC901	1-542-513-21	MICROPHONE
#8	3-078-890-01	SCREW, TAPPING (Silver)
#12	3-080-204-21	SCREW, TAPPING, P2 (Black)

5-1-3. CABINET (R) BLOCK

ns: not supplied



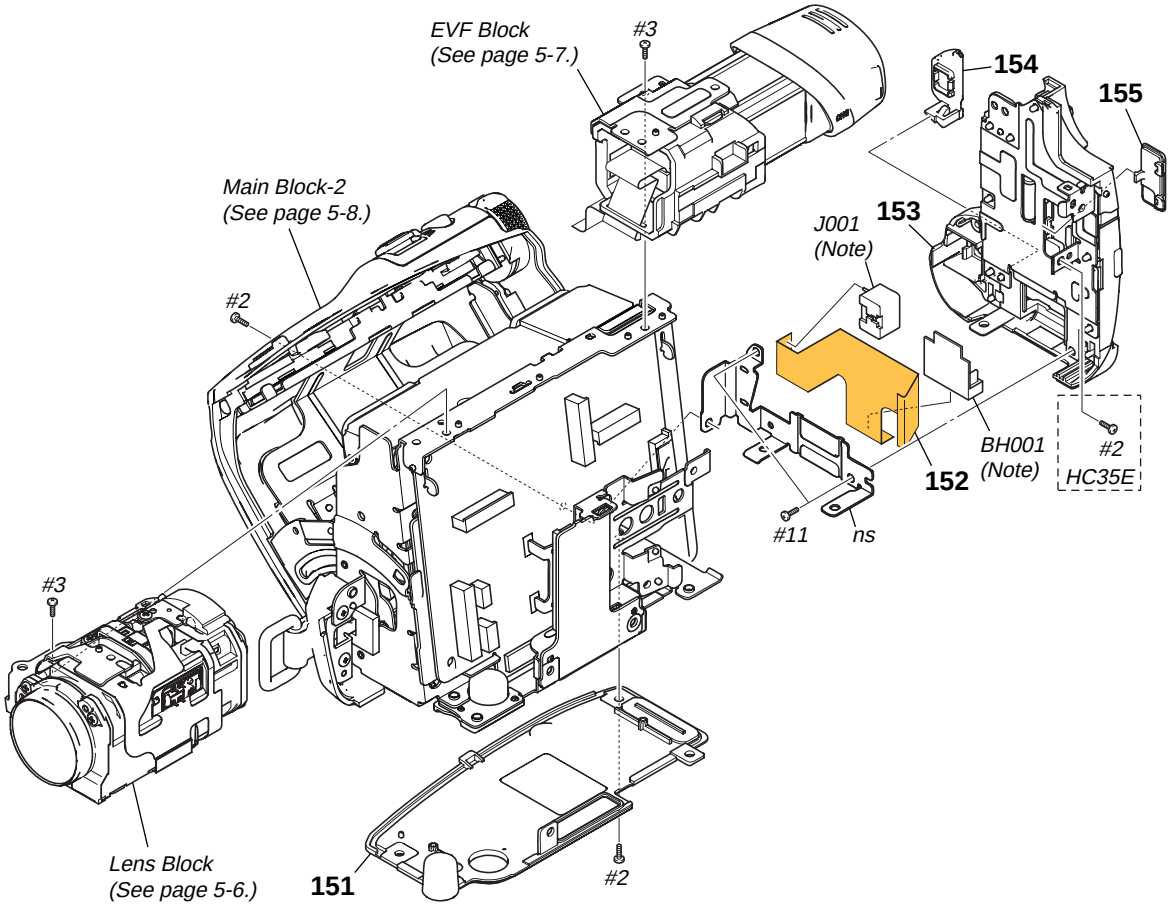
Note: Be sure read "HELP" when you install the FP-380 flexible board.

Ref. No.	Part No.	Description
101	2-664-728-11	CABINET (C), P (HC26/HC26E)
101	2-664-728-41	CABINET (C), P (HC23E)
101	2-664-728-51	CABINET (C), P (HC24E)
101	2-664-728-61	CABINET (C), P (HC35E)
102	3-941-343-01	TAPE (A)
103	A-1153-839-A	PD-281 BOARD, COMPLETE
* 104	1-867-778-11	FP-380 FLEXIBLE BOARD (Note)
105	2-664-737-01	COVER (C), HINGE
106	X-2067-431-1	HINGE ASSY
107	2-664-738-01	COVER (M), HINGE
108	2-664-735-01	CUSHION (172), TP
109	A-1153-842-A	FP-386 FLEXIBLE BOARD, COMPLETE

Ref. No.	Part No.	Description
110	X-2103-699-1	CABINET (M (172)) ASSY, P
111	1-479-063-21	KEY BLOCK, CONTROL (SB9000)
112	X-2103-698-1	CABINET (R (171)) ASSY
113	A-1153-903-A	LIGHT GUIDE BLOCK (2.5)
114	1-479-506-11	KEY BLOCK, CONTROL (CF17000)
LCD901	A-1149-654-A	TP BLOCK ASSY (25STMG06)
* SP901	1-825-260-31	K016NA503-12
#3	2-660-401-01	SCREW (M1.7), NEW TRU-STAR, P2 (Red)
#10	2-599-475-31	SCREW (M1.7) (Silver)
#12	3-080-204-21	SCREW, TAPPING, P2 (Black)
#13	3-085-397-01	SCREW (Silver)

5-1-4. MAIN BLOCK-1

ns: not supplied



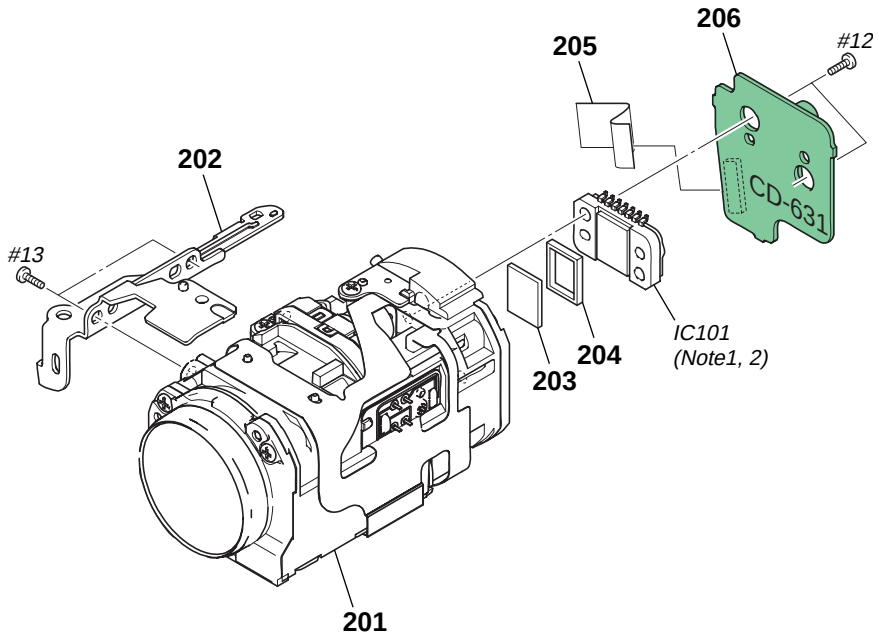
Note: BH001 and J001 are not included in FP-381 flexible board.

Ref. No.	Part No.	Description
151	X-2108-032-1	BOTTOM (172) ASSY, CABINET (HC23E/HC24E/HC26/HC26E)
151	X-2108-033-1	BOTTOM (173) ASSY, CABINET (HC35E)
* 152	1-867-779-11	FP-381 FLEXIBLE BOARD
153	X-2108-652-1	PANEL (172) ASSY, BT
154	2-664-984-01	COVER, DC (IN)
155	2-664-985-01	LID, CPC

Ref. No.	Part No.	Description
BH001	1-780-064-21	BATTERY TERMINAL BOARD (Note)
J001	1-815-792-11	CONNECTOR, DC-IN (7.2V) (Note)
#2	2-635-562-31	SCREW (M1.7) (Black)
#3	2-660-401-01	SCREW (M1.7), NEW TRU-STAR, P2 (Red)
#11	3-078-890-11	SCREW, TAPPING (Silver)

HARDWARE LIST

5-1-5. LENS BLOCK



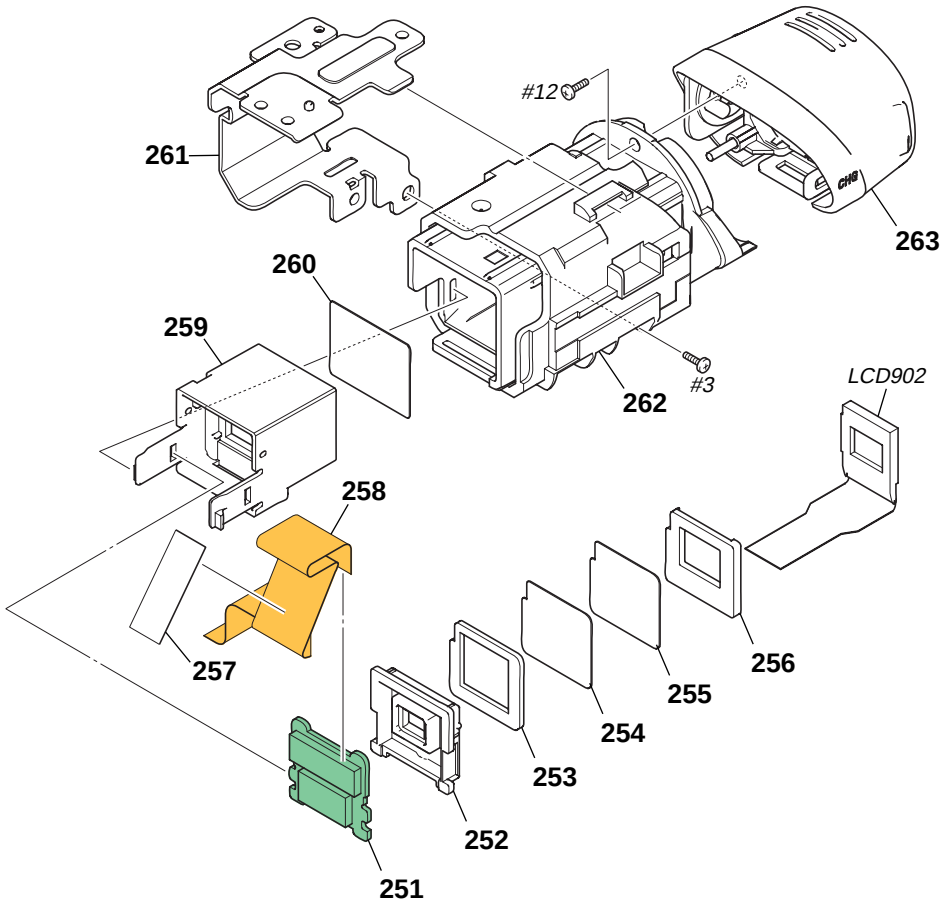
Note 1: IC101 is not included in CD-631 complete board.

Note 2: Be sure to read "Precuations for Replacement of Imager" on page 4-3 when changing the imager.

Ref. No.	Part No.	Description
201	1-788-332-11	OPTICS UNIT (EG03B)
201	8-848-804-01	LSV-1070B
* 202	2-664-981-01	FRAME (172), LENS
203	1-788-242-11	OPTICAL FILTER BLOCK
204	2-318-138-01	RUBBER, SEAL 1070
* 205	1-830-778-11	CABLE, FLEXIBLE FLAT (FFC-063)

Ref. No.	Part No.	Description
206	A-1153-810-A	CD-631 BOARD, COMPLETE
IC101	8-753-244-70	ICX610NKF-13 (CCD IMAGER) (HC26) (Note 1, 2)
IC101	8-753-244-71	ICX611NKF-13 (CCD IMAGER) (HC23E/HC24E/HC26E/HC35E) (Note 1, 2)
#12	3-080-204-21	SCREW, TAPPING, P2 (Black)
#13	3-085-397-01	SCREW (Silver)

5-1-6. EVF BLOCK

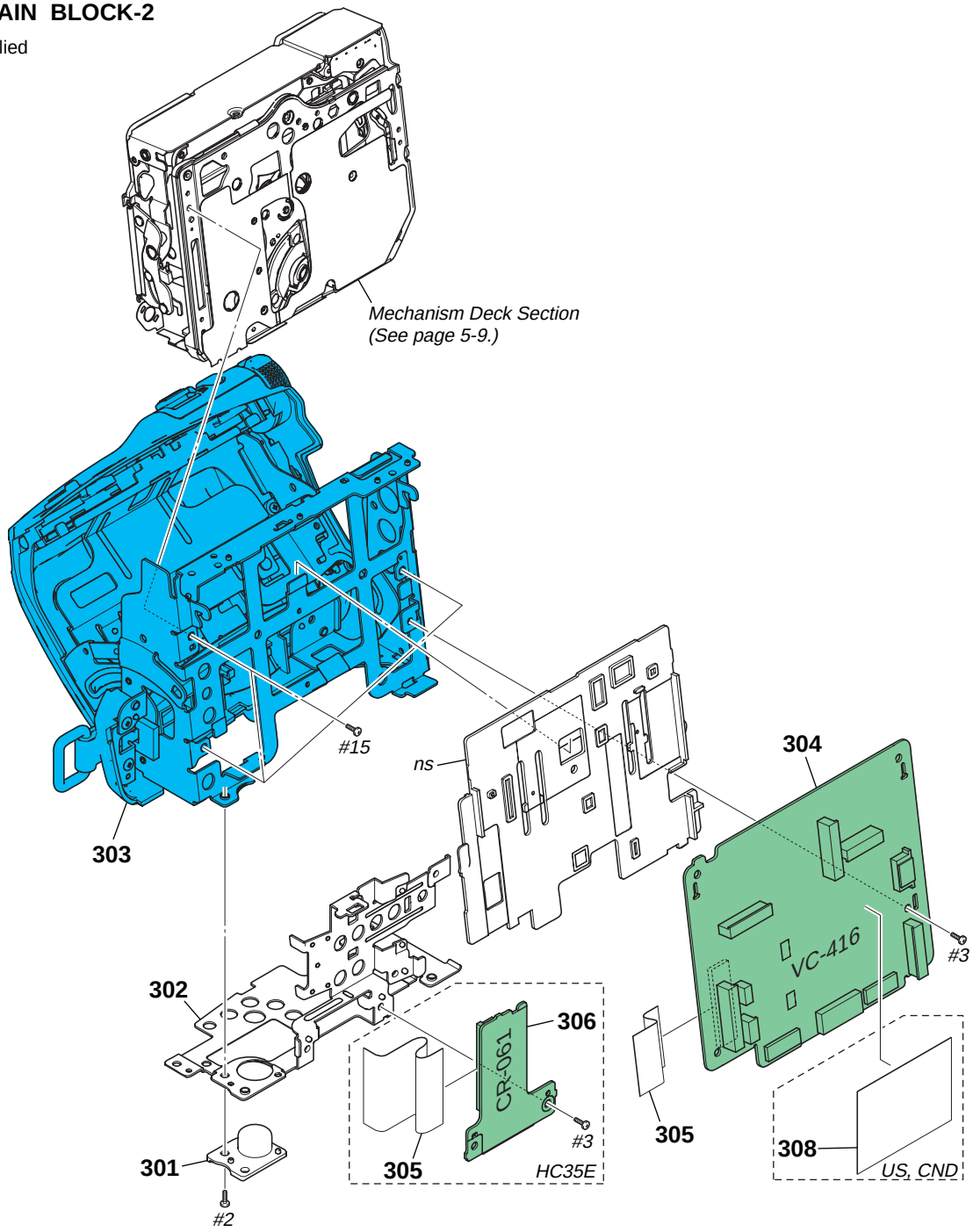


Ref. No.	Part No.	Description
251	A-1153-834-A	LB-121 BOARD, COMPLETE
252	2-664-672-01	GUIDE, LAMP
* 253	2-638-819-01	CUSHION, LCD
* 254	2-638-818-01	ILLUMINATOR
* 255	2-638-816-01	PLATE (TFT), DEFLECTION
256	2-664-671-01	SPACER, LCD
257	3-941-343-01	TAPE (A)
* 258	1-867-777-11	FP-379 FLEXIBLE BOARD

Ref. No.	Part No.	Description
* 259	2-664-670-01	CABINET, INNER
* 260	2-638-813-01	PLATE (CF), DEFLECTION
* 261	2-664-669-01	FRAME (172), FIXED
262	X-2103-696-1	VF (172) ASSY
263	X-2103-695-1	EYE CUP ASSY
LCD902	8-753-245-09	LCX059CKK-1
#3	2-660-401-01	SCREW (M1.7), NEW TRU-STAR, P2 (Red)
#12	3-080-204-21	SCREW, TAPPING, P2 (Black)

5-1-7. MAIN BLOCK-2

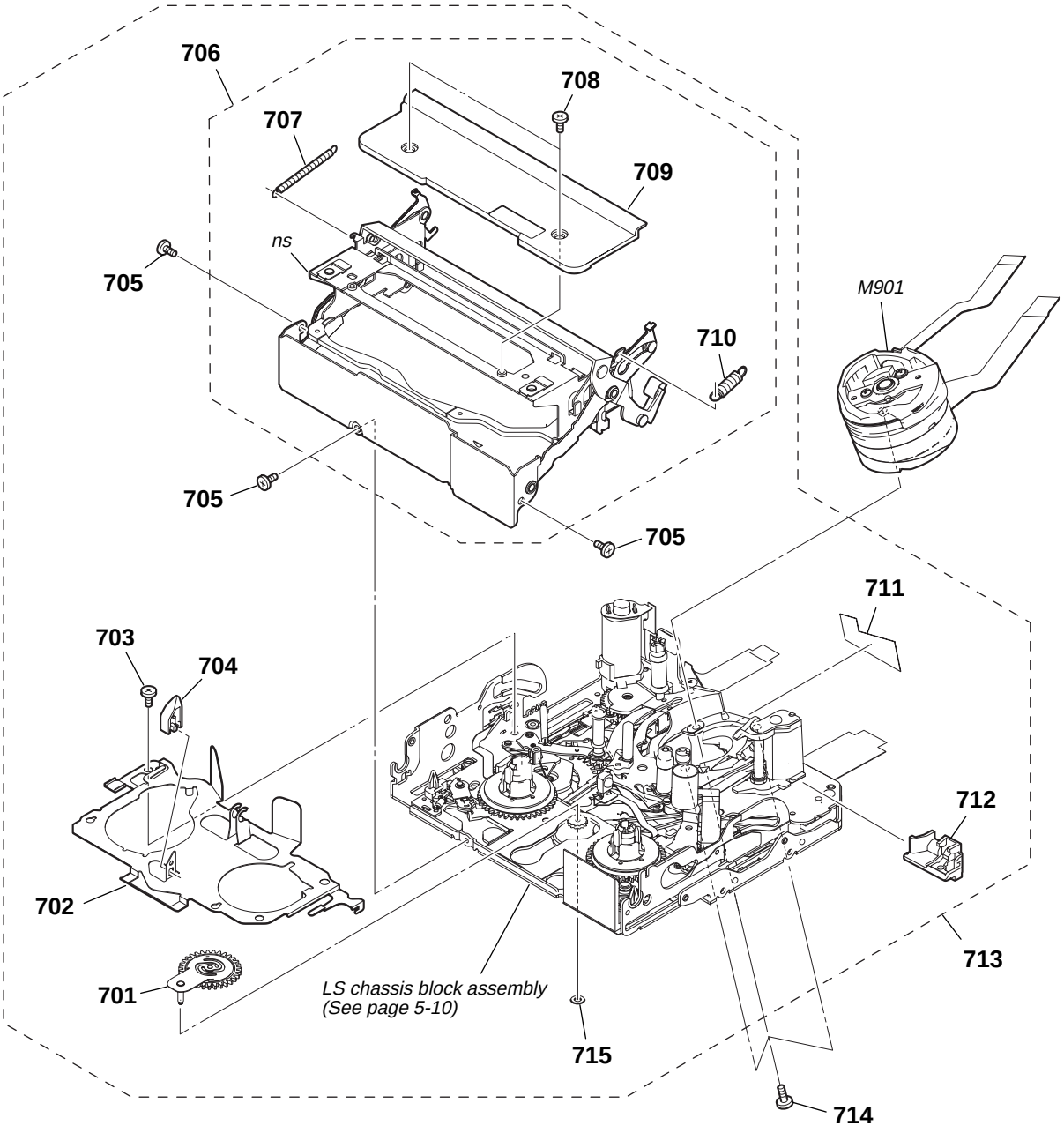
ns: not supplied



Ref. No.	Part No.	Description
301	2-664-982-01	SCREW, TRIPOD
* 302	2-664-976-01	FRAME (171), BOTTOM (HC23E/HC24E/HC26/HC26E)
* 302	2-664-977-01	FRAME (172), BOTTOM (HC35E)
303	1-479-507-11	KEY BLOCK, CONTROL (SS17000)
304	A-1154-404-A	VC-416 BOARD, COMPLETE (SERVICE) (HC23E/HC24E/HC26/HC26E)
304	A-1154-405-A	VC-416 BOARD, COMPLETE (SERVICE) (HC35E)
* 305	1-830-775-11	CABLE, FLEXIBLE FLAT (FFC-060)
306	A-1153-808-A	CR-061 BOARD, COMPLETE (HC35E)
308	2-659-500-01	LABEL, FUSE REPLACEMENT CAUTION (US, CND)
#2	2-635-562-31	SCREW (M1.7) (Black)
#3	2-660-401-01	SCREW (M1.7), NEW TRU-STAR, P2 (Red)
#15	3-062-214-01	SCREW (M1.4X1.5) (Silver)

5-1-8. MECHANISM DECK SECTION

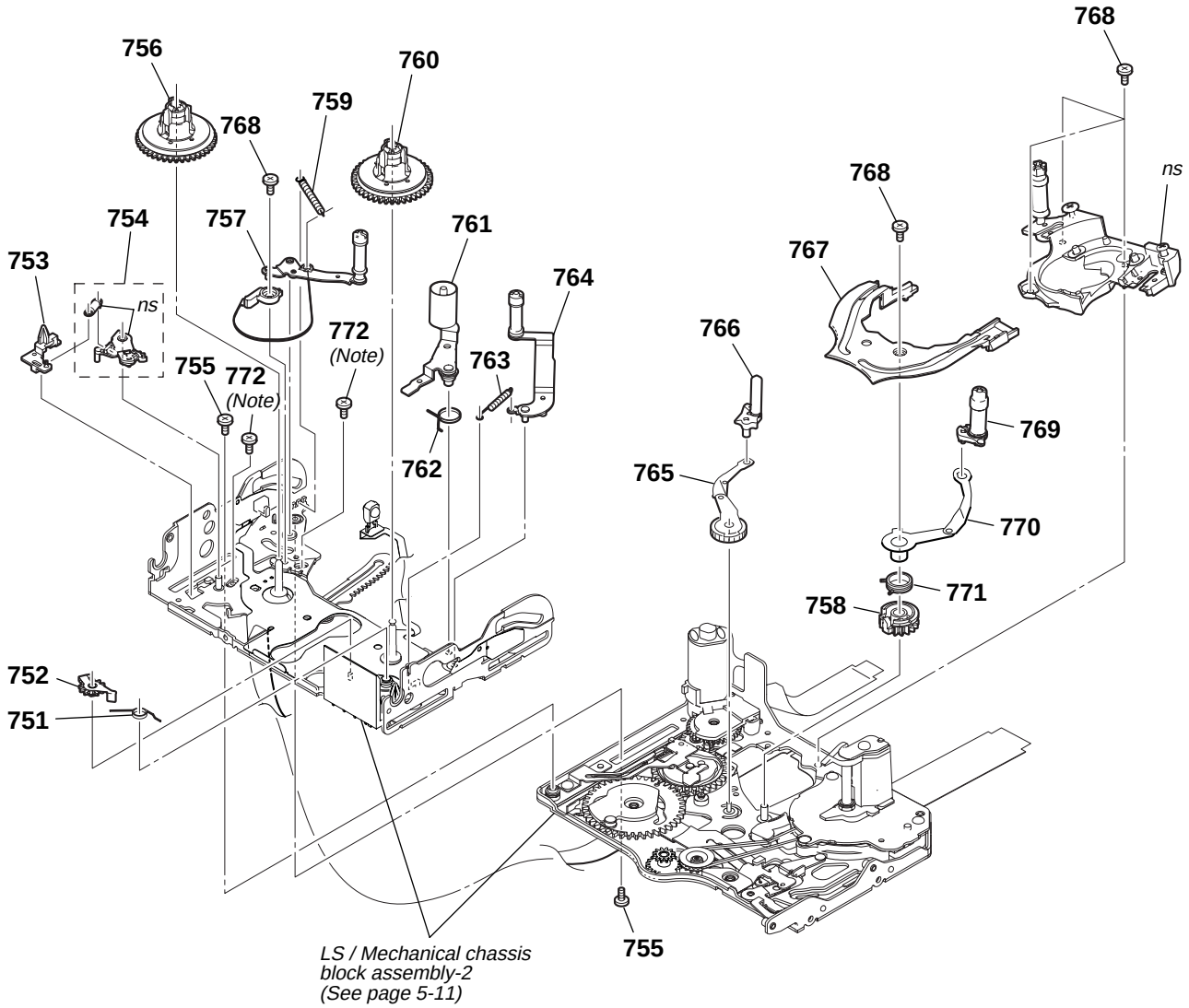
ns : not supplied



Ref. No.	Part No.	Description
701	X-2024-478-1	PENDULUM ASSY
702	2-342-917-02	LED BASE
703	7-627-850-77	SCREW, PRECISION +P 1.4X1.8
704	3-079-366-11	RELEASE, REEL LOCK
705	3-703-816-08	SCREW (M1.4X1.4), SPECIAL HEAD
706	X-2024-450-1	COMPARTMENT ASSY, CASSETTE
707	2-342-926-01	SPRING (ARM S), TENSION COIL
708	2-546-417-01	SCREW (M1.4)
709	2-342-933-01	PLATE, TOP
710	2-342-927-01	SPRING (ARM T), TENSION COIL
711	2-541-585-01	SHEET, FLEXIBLE ADHESIVE
712	2-342-918-01	TG6 CATCHER
713	A-1080-997-A	MD (N100) SUB ASSY A
714	3-703-816-13	SCREW (M1.4X2.0), SPECIAL HEAD
715	3-315-414-31	WASHER
M901	A-1137-055-A	DRUM (DEH-33D-R) (SERVICE)

5-1-9. LS/MECHANICAL CHASSIS BLOCK ASSEMBLY-1

ns : not supplied



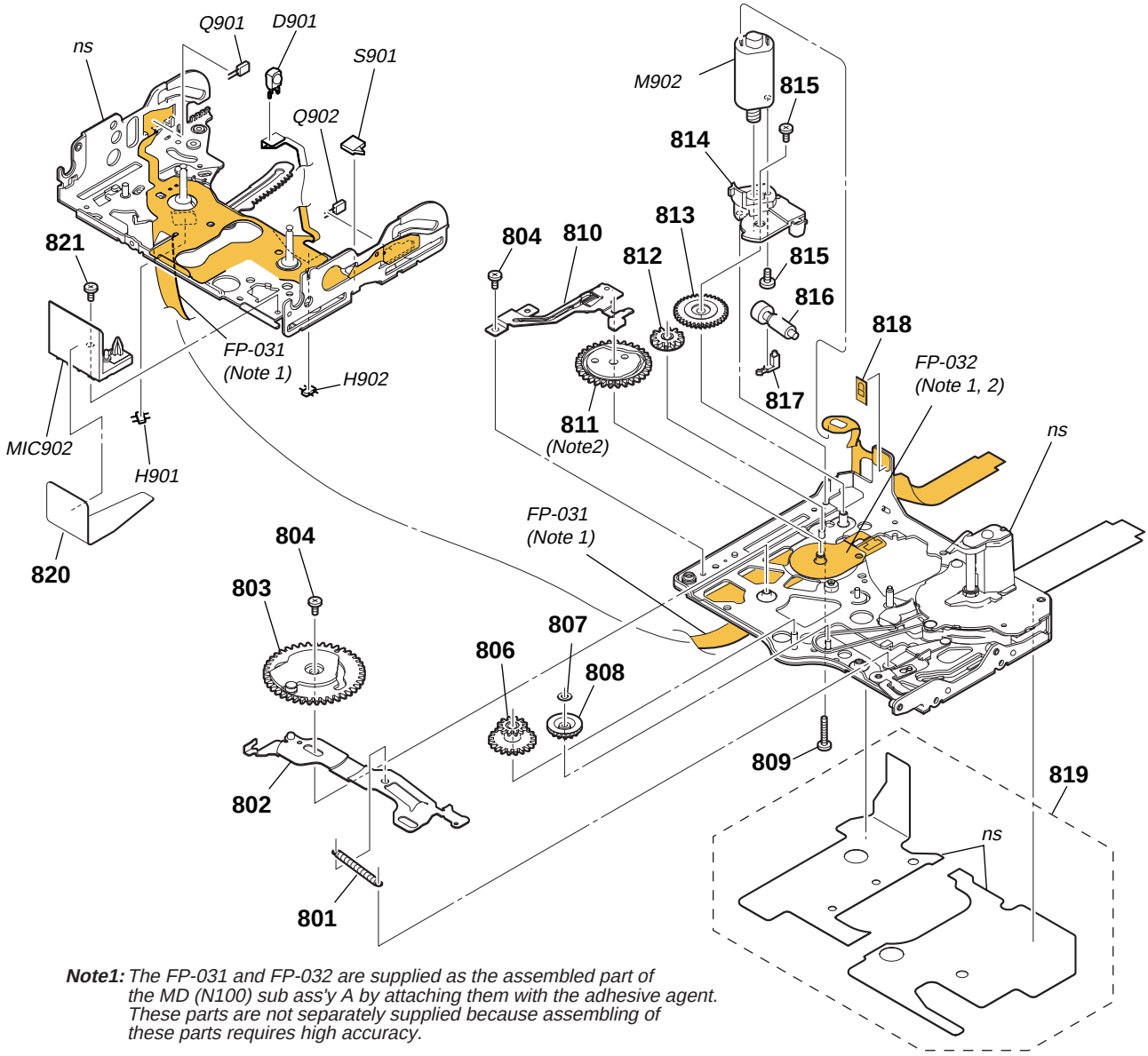
Note: *These two screws are the fixing screws of the LS cam plate.*
These two fixing screws are used for adjsting the LS cam plate position.
(refar to 4-2. LS cam adjustment of DV mechanical adjustment manual IX)

Ref. No.	Part No.	Description
751	2-342-759-01	SPRING, RVS BRAKE
752	A-1083-005-A	BLOCK ASSY, RVS BRAKE
753	2-342-731-01	POSITIONING, S
754	A-1083-006-A	BLOCK ASSY, S BRAKE
755	3-075-097-11	SCREW (M1.4X1.4), SPECIAL HEAD
756	X-2024-473-1	TABLE ASSY, S REEL
757	A-1083-007-B	BLOCKASSY, TENSION REGULATOR
758	2-342-705-01	GEAR (T), GL
759	2-342-902-01	SPRING, TENSION REGULATOR
760	X-2024-474-1	TABLE ASSY, T REEL
761	X-2024-476-1	ARM ASSY, PINCH

Ref. No.	Part No.	Description
762	2-342-906-01	SPRING (PINCH RETURN), TORSION
763	2-342-626-01	SPRING (RETURN TG6), EXTENSION
764	A-1083-002-A	BLOCK ASSY, TG6
765	X-2024-468-1	ARM ASSY (S), GL
766	X-2024-465-1	COASTER (S) ASSY
767	2-342-612-01	RAIL
768	3-703-816-13	SCREW (M1.4X2.0), SPECIAL HEAD
769	X-2024-466-1	COASTER (T) ASSY
770	X-2024-469-1	ARM (T) ASSY, GL
771	2-342-716-01	SPRING (T), TORSION COIL
772	3-703-816-08	SCREW (M1.4X1.4), SPECIAL HEAD (for adjustment)

5-1-10. LS/MECHANICAL CHASSIS BLOCK ASSEMBLY-2

ns : not supplied



Note1: *The FP-031 and FP-032 are supplied as the assembled part of the MD (N100) sub ass'y A by attaching them with the adhesive agent. These parts are not separately supplied because assembling of these parts requires high accuracy.*

Note2: *The mode switch (S903) function works when the contactor of the FP-032 contacts with the bottom surface of wiper of the mode gear ass'y.*

Ref. No.	Part No.	Description
801	2-342-624-01	SPRING (PINCH LIMITTER), EXTENSION
802	X-2024-463-1	SLIDER ASSY, MODE
803	X-2024-462-1	GEAR ASSY, CAM
804	3-075-097-11	SCREW (M1.4X1.4), SPECIAL HEAD
806	2-342-621-01	GEAR, RELAY
807	3-315-414-31	WASHER
808	2-342-620-01	GEAR, CONVERSION
809	3-084-377-01	HEAD (SCREW M1.2)
810	X-2024-460-1	BASE ASSY, CAM
811	X-2024-461-1	GEAR ASSY, MODE
812	2-342-615-01	GEAR, NO.2
813	2-342-691-01	GEAR, NO.1
814	2-342-688-01	MOTOR HOLDER
815	3-895-822-71	SCREW (M1.2X2), SPECIAL, 0
816	2-342-689-01	WORM SHAFT (2J)

Ref. No.	Part No.	Description
817	2-342-690-01	BASE, MOTOR HOLDER
818	1-677-049-11	FP-228 FLEXIBLE BOARD (DEW SENSOR)
819	2-342-686-01	COVER, CAPSTAN
820	2-541-984-01	MIC COVER
821	3-703-816-13	SCREW (M1.4X2.0), SPECIAL HEAD
D901	6-500-652-01	DIODE GL453SE0000F (TAPE LED)
H901	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (S REEL)
H902	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (T REEL)
M902	X-2024-464-1	MOTOR ASSY (LOADING)
MIC902	1-818-576-11	PIN, CONNECTOR (WITH DETECTION SWITCH)
Q901	6-550-672-01	TRANSISTOR PT4850FJE00F (TAPE END)
Q902	6-550-672-01	TRANSISTOR PT4850FJE00F (TAPE TOP)
S901	1-786-448-22	SWITCH, PUSH (1 KEY) (CC DOWN)

5-2. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description			
	A-1153-810-A	CD-631 BOARD, COMPLETE			
		**********			
		(IC101 is not included in CD-631 complete board.)			
		< CAPACITOR >			
C101	1-124-779-00	ELECT CHIP	10uF	20%	16V
C102	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C104	1-124-779-00	ELECT CHIP	10uF	20%	16V
		< CONNECTOR >			
CN101	1-766-344-51	CONNECTOR, FFC/FPC 14P			
		< IC >			
IC101	8-753-244-70	ICX610NKF-13 (CCD IMAGER) (HC26) (Note)			
IC101	8-753-244-71	ICX611NKF-13 (CCD IMAGER) (HC23E/HC24E/HC26E/HC35E) (Note)			
		< COIL >			
L101	1-400-588-11	INDUCTOR	10uH		
		< TRANSISTOR >			
Q101	8-729-423-55	TRANSISTOR	2SC3931-D		
		< RESISTOR >			
R101	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
	A-1153-808-A	CR-061 BOARD, COMPLETE (HC35E)			
		**********			
		(CN002 (multi connector) is not supplied, but this is included in CR-061 complete board.)			
		< CAPACITOR >			
C001	1-164-934-11	CERAMIC CHIP	330PF	10%	50V
C002	1-164-934-11	CERAMIC CHIP	330PF	10%	50V
		< CONNECTOR >			
CN002	(Not supplied)	CONNECTOR, MULTIPLE (SOCKET)			
CN003	1-766-613-51	CONNECTOR, FFC/FPC 36P			
	(Not supplied)	FP-031 FLEXIBLE BOARD			
		**********			
		(This flexible board is included in MD (N100) SUB ASSY A (A-1080-997-A).)			
		< DIODE >			
D901	6-500-652-01	DIODE GL453SE0000F (TAPE LED)			
		< HOLE ELEMENT >			
H901	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (S REEL)			
H902	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (T REEL)			
		< CONNECTOR >			
MIC902	1-818-576-11	PIN, CONNECTOR (WITH DETECTION SWITCH)			

Ref. No.	Part No.	Description			
		< TRANSISTOR >			
Q901	6-550-672-01	TRANSISTOR	PT4850FJE00F (TAPE END)		
Q902	6-550-672-01	TRANSISTOR	PT4850FJE00F (TAPE TOP)		
		< SWITCH >			
S901	1-786-448-22	SWITCH, PUSH (1 KEY) (CC DOWN)			
	(Not supplied)	FP-032 FLEXIBLE BOARD			
		**********			
		(This flexible board with S903 is included in MD (N100) SUB ASSY A (A-1080-997-A).)			
	1-677-049-11	FP-228 FLEXIBLE BOARD (DEW SENSOR)			
		**********			
*	1-867-778-11	FP-380 FLEXIBLE BOARD			
		**********			
*	1-867-779-11	FP-381 FLEXIBLE BOARD			
		**********			
		(BH001 and J001 are not included in FP-381 flexible board.)			
		< BATTERY TERMINAL >			
BH001	1-780-064-21	BATTERY TERMINAL BOARD			
		< JACK >			
J001	1-815-792-11	CONNECTOR, DC-IN (7.2V)			
	A-1153-842-A	FP-386 FLEXIBLE BOARD, COMPLETE			
		**********			
		< SWITCH >			
S101	1-786-180-31	SWITCH, PUSH (1KEY) (PANEL REVERSE)			
	A-1153-834-A	LB-121 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C301	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C302	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
		< CONNECTOR >			
* CN301	1-818-046-51	CONNECTOR, FFC/FPC 20P			
* CN302	1-817-560-51	CONNECTOR, FPC (ZIP) 21P			
		< DIODE >			
D301	6-500-941-01	DIODE MAZS056008S0			
* D302	6-501-325-01	DIODE NESW007T-T017 (BACKLIGHT)			

Note: Be sure to read “Precautions for Replacement of Imager” on page 4-3 when changing the imager.

Ref. No.	Part No.	Description			
		< RESISTOR >			
R304	1-218-989-11	RES-CHIP	1M	5%	1/16W
	A-1153-839-A	PD-281 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C9603	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C9605	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C9606	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		< CONNECTOR >			
* CN9601	1-817-513-51	CONNECTOR, FFC/FPC (ZIF) 30P			
* CN9602	1-818-069-51	CONNECTOR, FFC/FPC (ZIF) 6P			
CN9603	1-573-915-51	CONNECTOR, FFC/FPC (ZIF) 6P			
CN9604	1-573-915-51	CONNECTOR, FFC/FPC (ZIF) 6P			
CN9605	1-815-031-51	CONNECTOR, FFC/FPC (ZIF) 24P			
		< DIODE >			
D9602	6-500-941-01	DIODE MAZS056008S0			
* D9603	6-501-476-01	DIODE NSSW008CT-T071 (BACKLIGHT)			
* D9604	6-501-476-01	DIODE NSSW008CT-T071 (BACKLIGHT)			
* D9605	6-501-476-01	DIODE NSSW008CT-T071 (BACKLIGHT)			
		< TRANSISTOR >			
Q9601	8-729-427-67	TRANSISTOR	XP421F-TXE		
Q9602	8-729-427-37	TRANSISTOR	XP411F-TXE		
		< RESISTOR >			
R9602	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R9603	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R9604	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R9607	1-218-989-11	RES-CHIP	1M	5%	1/16W
	A-1153-836-A	SI-051 BOARD, COMPLETE (HC23E/HC24E/HC26/HC26E)			
	A-1153-837-A	SI-051 BOARD, COMPLETE (HC35E)			
		**********			
		(IC601 is not included in SI-051 complete board.)			
		< BATTERY >			
⚠* BT601	1-756-640-11	BATTERY, LITHIUM SECONDARY			
		< CAPACITOR >			
C616	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C617	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
		< CONNECTOR >			
CN601	1-815-794-21	CONNECTOR (MULTIPLE) (A/V OUT)			
CN602	1-778-507-21	PIN, CONNECTOR (PC BOARD) 4P			
CN603	1-794-962-11	CONNECTOR, SQUARE TYPE (USB 5P) (USB) (HC23E/HC24E/HC26/HC26E)			
CN604	1-794-276-11	CONNECTOR, SQUARE TYPE 4P (DV OUT: HC23E/HC24E) (DV: HC26/HC26E)			
CN605	1-818-074-51	CONNECTOR, FFC/FPC (ZIF) 36P			

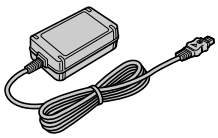
Ref. No.	Part No.	Description			
		< DIODE >			
D602	6-500-044-01	DIODE DF6A6.8FU (TE85R)			
D603	6-500-776-01	DIODE MAZW068H0LS0			
D606	6-500-512-01	DIODE CL-330IRS-X-TU (IR EMITTER/NIGHTSHOT)			
D608	8-719-078-02	DIODE 1SS357 (T3SONY1) (HC23E/HC24E/HC26/HC26E)			
		< FUSE >			
⚠F601	1-576-897-21	FUSE (0.2A/32V) (HC23E/HC24E/HC26/HC26E)			
⚠F602	1-576-897-21	FUSE (0.2A/32V) (HC23E/HC24E/HC26/HC26E)			
		< FERRITE BEAD >			
FB601	1-414-760-21	BEAD, FERRITE (CHIP) (1608)			
FB602	1-414-760-21	BEAD, FERRITE (CHIP) (1608)			
		< IC >			
* IC601	6-600-505-01	IC RPM7640-V17 (HC24E/HC35E)			
		< LINE FILTER >			
LF602	1-400-633-21	COMMON MODE CHOKE COIL (HC23E/HC24E/HC26/HC26E)			
LF603	1-400-633-21	COMMON MODE CHOKE COIL (HC23E/HC24E/HC26/HC26E)			
		< RESISTOR >			
R623	1-216-801-11	METAL CHIP	22	5%	1/10W
R624	1-216-801-11	METAL CHIP	22	5%	1/10W
		< COMPOSITION CIRCUIT BLOCK >			
RB602	1-234-378-21	RES, NETWORK	10K (1005X4) (HC23E/HC24E/HC26/HC26E)		

Electrical parts list of the VC-416 board is not shown.
Pages 5-14 to 5-18 are not shown.

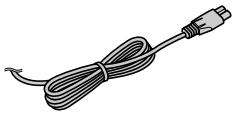
• Refer to page 5-1 for mark ⚠.

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

Checking supplied accessories.

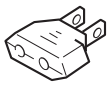


AC Adaptor
(AC-L25A/L25B)
⚠ 1-479-288-13

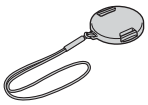


Power Cord
⚠ 1-555-074-71 (AUS)
⚠ 1-782-476-41 (CH)
⚠ 1-783-374-22 (HK)
⚠ 1-790-107-51 (US, CND)
⚠ 1-823-150-21 (AEP, EE, NE)
⚠ 1-824-910-31 (E: PAL)
⚠ 1-830-518-31 (E: NTSC)
⚠ 1-830-736-21 (UK)
⚠ 1-832-115-11 (KR)

Conversion (2P) Adaptor
⚠ 1-569-007-12 (E: NTSC)

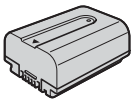


Conversion (2P) Adaptor
⚠ 1-569-008-12 (E: PAL, HK)

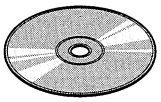


Lens Cap
X-2108-241-1

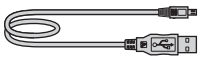
A/V Connection Cable
1-823-156-51



Rechargeable Battery Pack
NP-FP30
⚠ A-1082-950-A (US, CND)
⚠ A-1082-951-A
(EXCEPT US, CND)

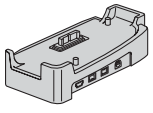


CD-ROM
"Picture Package Ver. 1.5.1"
2-666-755-01



USB Cable
1-829-868-31
(HC24E/HC35E)

Wireless Remote Commander
RMT-830
1-477-898-71
(HC24E/HC35E)



Handycam Station
1-819-870-11 (HC35E)

21-pin Adaptor
1-770-783-21 (HC35E)

Other accessories

2-659-811-11 MANUAL, INSTRUCTION (HC26) (ENGLISH)(US, CND, E)
2-659-811-21 MANUAL, INSTRUCTION (HC26) (FRENCH) (CND)
2-659-811-31 MANUAL, INSTRUCTION (HC26) (SPANISH) (E, AR)
2-659-811-51 MANUAL, INSTRUCTION (HC26) (TRADITIONAL CHINESE) (E)
2-659-811-61 MANUAL, INSTRUCTION (HC26) (KOREAN) (KR)

2-659-812-11 MANUAL, INSTRUCTION (HC23E/HC26E/HC35E) (ENGLISH) (AEP, UK, E, AUS, HK)
2-659-812-21 MANUAL, INSTRUCTION (HC23E/HC26E/HC35E) (FRENCH) (AEP)
2-659-812-31 MANUAL, INSTRUCTION (HC23E/HC24E/HC35E) (GERMAN) (AEP)
2-659-812-41 MANUAL, INSTRUCTION (HC23E/HC24E/HC35E) (DUTCH) (AEP)
2-659-812-51 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (SPANISH) (AEP)

2-659-812-61 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (PORTUGUESE) (AEP)
2-659-812-71 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (ITALIAN) (AEP)
2-659-812-81 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (GREEK) (AEP)
2-659-812-91 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (SWEDISH) (NE)
2-665-183-11 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (RUSSIAN) (NE)

2-665-183-21 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (DANISH) (NE)
2-665-183-31 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (FINNISH) (NE)
2-665-183-41 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (POLISH) (EE)
2-665-183-51 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (CZECH) (EE)
2-665-183-61 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (HUNGARIAN) (EE)

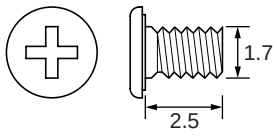
2-665-183-71 MANUAL, INSTRUCTION (HC23E/HC24E/HC26E/HC35E) (SLOVAK) (EE)
2-665-183-81 MANUAL, INSTRUCTION (HC26E) (ARABIC) (E)
2-665-183-91 MANUAL, INSTRUCTION (HC24E/HC26E/HC35E) (PERSIAN) (E)
2-665-184-11 MANUAL, INSTRUCTION (HC26E) (TRADITIONAL CHINESE) (HK)
2-665-184-21 MANUAL, INSTRUCTION (HC26E) (SIMPLIFIED CHINESE) (E)

2-665-184-31 MANUAL, INSTRUCTION (HC26E) (THAI) (E)
2-665-185-11 MANUAL, INSTRUCTION (HC26E) (SIMPLIFIED CHINESE) (CH)

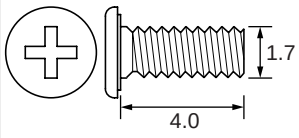
• Refer to the page 5-1 for mark ⚠.

HARDWARE LIST

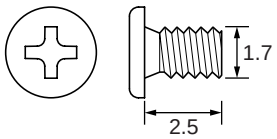
#1: M1.7 X 2.5 (Black)
2-635-562-11



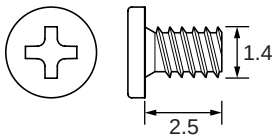
#2: M1.7 X 4.0 (Black)
2-635-562-31



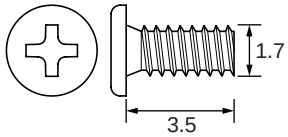
#3: M1.7 X 2.5 (Red)
2-660-401-01



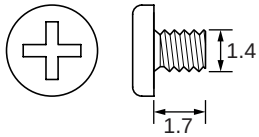
#4: M1.4 X 2.5 (Dark Silver)
3-348-998-81



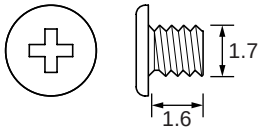
#5: M1.7 X 3.5 (Black)
3-080-204-01



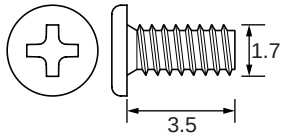
#6: M1.4 X 1.7 (Silver)
2-598-474-01



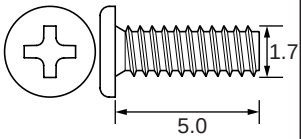
#7: M1.7 X 1.6 (Black)
7-627-552-18



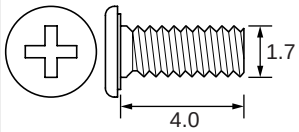
#8: M1.7 X 3.5 (Silver)
3-078-890-01



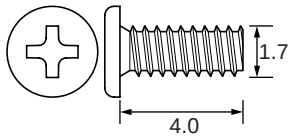
#9: M1.7 X 5.0 (Silver)
3-078-890-21



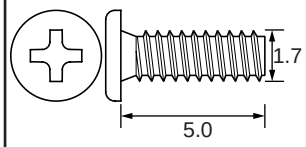
#10: M1.7 X 4.0 (Silver)
2-599-475-31



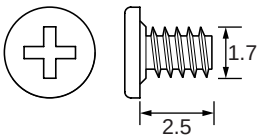
#11: M1.7 X 4.0 (Silver)
3-078-890-11



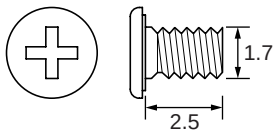
#12: M1.7 X 5.0 (Black)
3-080-204-21



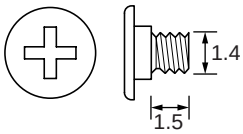
#13: M1.7 X 2.5 (Silver)
3-085-397-01



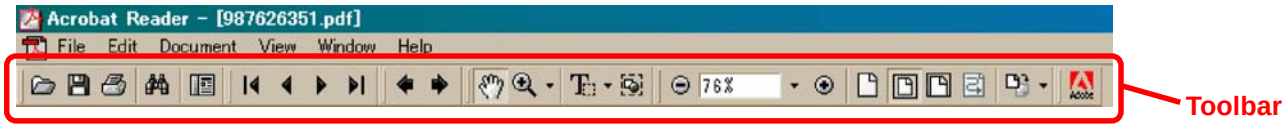
#14: M1.7 X 2.5 (Silver)
2-599-475-11



#15: M1.4 X 1.5 (Silver)
3-062-214-01



[Description of main button functions on toolbar of the Adobe Acrobat Reader Ver5.0 (for Windows)]



Printing a text

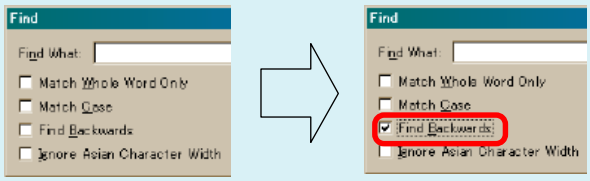
1. Click the Print button .
2. Specify a printer, print range, number of copies, and other options, and then click [OK].

Application of printing:
To set a range to be printed within a page, select the graphic selection tool and drag on the page to enclose a range to be printed, and then click the Print button.

Finding a text

1. Click the Find button .
2. Enter a character string to be found into a text box, and click the [Find]. (Specify the find options as necessary)

Application to the Service Manual:
To execute "find" from current page toward the previous pages, select the check box "Find Backward" and then click the "Find".



3. Open the find dialog box again, and click the [Find Again] and you can find the matched character strings displayed next. (Character strings entered previously are displayed as they are in the text box.)

Application to the Service Manual:
The parts on the drawing pages (block diagrams, circuit diagrams, printed circuit boards) and parts list pages in a text can be found using this find function. For example, find a Ref. No. of IC on the block diagram, and click the [Find Again] continuously, so that you can move to the Ref. No. of IC on the circuit diagram or printed circuit board diagram successively.
Note: The find function may not be applied to the Service Manual depending on the date of issue.

Switching a page

- To move to the first page, click the .
- To move to the last page, click the .
- To move to the previous page, click the .
- To move to the next page, click the .

Reversing the screens displayed once

- To reverse the previous screens (operation) one by one, click the .
- To advance the reversed screens (operation) one by one, click the .

Application to the Service Manual:
This function allows you to go and back between circuit diagram and printed circuit board diagram, and accordingly it will be convenient for the voltage check.

Moving with link

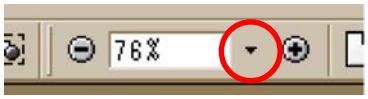
1. Select either palm tool , zoom tool , text selection tool , or graphic selection tool .
2. Place the pointer in the position in a text where the link exists (such as a button on cover and the table of contents page, or blue characters on the removal flowchart page or drawing page), and the pointer will change to the forefinger form .
3. Then, click the link. (You will go to the link destination.)

Moving with bookmark:
Click an item (text) on the bookmark pallet, and you can move to the link destination. Also, clicking can display the hidden items.
(To go back to original state, click)

Zooming or rotating the screen display

"Zoom in/out"

- Click the triangle button in the zoom control box to select the display magnification. Or, you may click or for zooming in or out.



"Rotate"

- Click rotate tool , and the page then rotates 90 degrees each.

Application to the Service Manual:
The printed circuit board diagram you see now can be changed to the same direction as the set.

Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2006.01	Official Release	—	—

DCR-HC23E/HC24E/HC26/HC26E/HC35E

RMT-830

SERVICE MANUAL

LEVEL 3

Ver 1.0 2006.01

Revision History

How to use Acrobat Reader

Photo: DCR-HC35E

US Model
Canadian Model
AEP Model
UK Model
East European Model
North European Model
E Model
Argentine Model
Australian Model
Brazilian model
Chinese Model
Hong Kong Model
Korea Model

N MECHANISM (MDX-N110)

Link

- MODEL INFORMATION TABLE
- PRINTED WIRING BOARDS
- REPAIR PARTS LIST
- SCHEMATIC DIAGRAMS

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Mini DV Digital Video Cassette

DIGITAL VIDEO CAMERA RECORDER

SONY®

DCR-HC23E/HC24E/HC26/HC26E/HC35E_L3
9-876-927-11

Sony EMCS Co.

2006A0500-1
© 2006.1
Published by DI Technical Support Department

Model information table

Model	DCR-HC23E	DCR-HC24E	DCR-HC26	DCR-HC26E	DCR-HC35E
Destination	AEP, EE, NE	AEP, UK, EE, NE	US, CND, E, AR BR, KR	NE, E, AUS, CH, HK	AEP, UK, EE, NE
Color system	PAL	PAL	NTSC	PAL	PAL
DV Interface	OUT	OUT	IN/OUT	IN/OUT	IN/OUT (Note)
Remote commander	×	○	×	×	○
Cradle (Handycam Station)	×	×	×	×	○
CR board	×	×	×	×	CR-061

Note: DV Interface on the Cradle (Handycam Station)

- Abbreviation
  AR : Argentine model
  AUS : Australian model
  BR : Brazilian model
  CH : Chinese model
  CND : Canadian model
  EE : East European model
  HK : Hong Kong model
  J : Japanese model
  JE : Tourist model
  KR : Korea model
  NE : North European model

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

TABLE OF CONTENTS

Section *Title* *Page*

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-2. Schematic Diagrams ····· 4-3
4-3. Printed Wiring Boards ····· 4-25
4-5. Mounted Parts Location ····· 4-35

5. REPAIR PARTS LIST

5-2. Electrical Parts List ····· 5-14

4-2. SCHEMATIC DIAGRAMS

Link

VC-416 BOARD (1/12) (A/D CONVERTER, TIMING GENERATOR)	VC-416 BOARD (7/12) (CAMERA/MECHA CONTROL)
VC-416 BOARD (2/12) (LENS DRIVE, EVR)	VC-416 BOARD (8/12) (SERVO)
VC-416 BOARD (3/12) (DV SIGNAL PROCESS, DV INTERFACE)	VC-416 BOARD (9/12) (HI CONTROL)
VC-416 BOARD (4/12) (REC/PB AMP)	VC-416 BOARD (10/12) (DC IN)
VC-416 BOARD (5/12) (VIDEO OUT, AUDIO I/O)	VC-416 BOARD (11/12) (DC/DC CONVERTER)
VC-416 BOARD (6/12) (LCD/EVF DRIVE)	VC-416 BOARD (12/12) (CONNECTOR)

COMMON NOTE FOR SCHEMATIC DIAGRAMS

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-2. SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. pF : μμF. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10 W unless otherwise noted.
  kΩ=1000 Ω, MΩ=1000 kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.

  Example C541 L452
  22U 10UH
  TA A 2520

  Kinds of capacitor / Case size — External dimensions (mm)
- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- Parts with ★ differ according to the model/destination.
  Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- : B+ Line
- : B– Line
- : IN/OUT direction of (+,–) B LINE.
- : adjustment for repair.
- : not use circuit

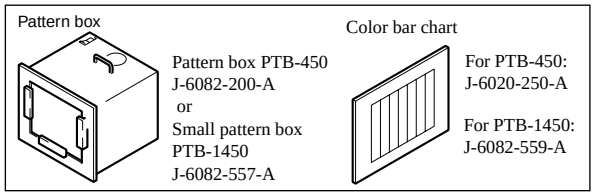
(Measuring conditions voltage and waveform)

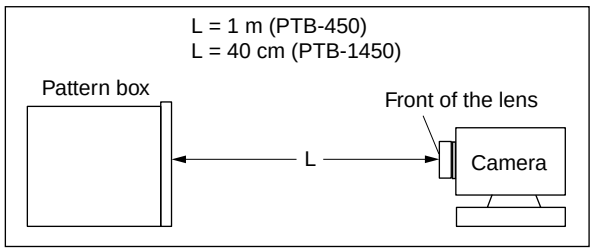
- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms.
  (VOM of DC 10 MΩ input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

Precautions for Replacement of Imager

- If the imager has been replaced, carry out all the adjustments for the camera section.
- As the imager may be damaged by static electricity from its structure, handle it carefully like for the MOS IC.
  In addition, ensure that the receiver is not covered with dusts nor exposed to strong light.

1. Connection





2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

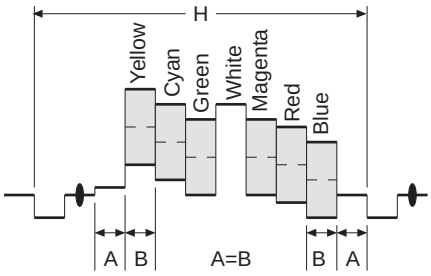


Fig. a (Video output terminal output waveform)

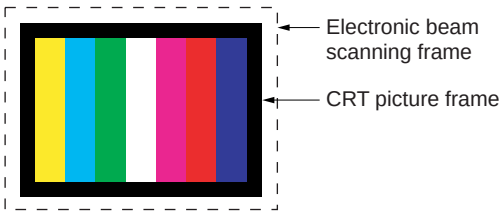


Fig.b (Picture on monitor TV)

When indicating parts by reference number, please include the board name.

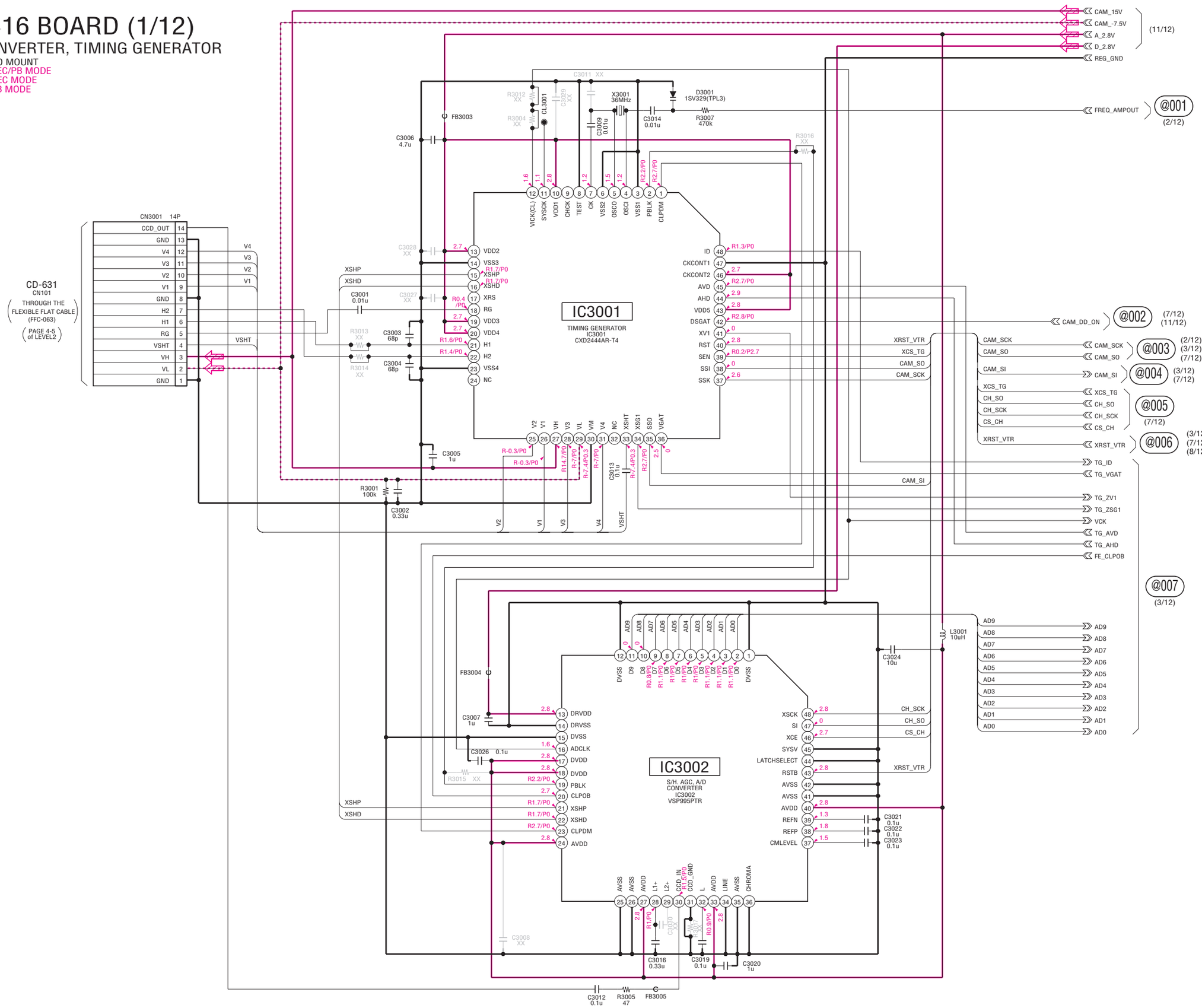
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifie.

VC-416 BOARD (1/12)

A/D CONVERTER, TIMING GENERATOR

XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE

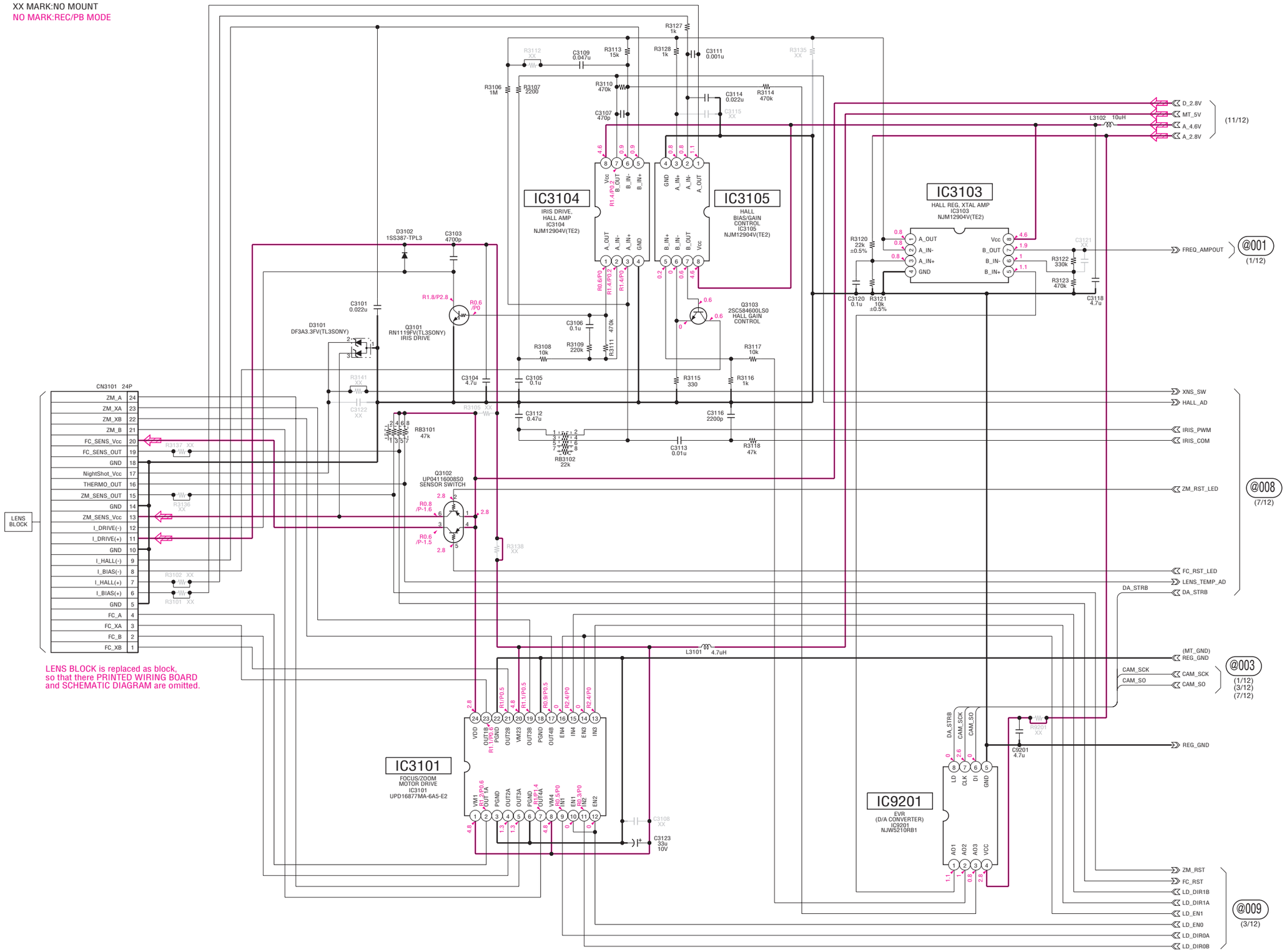


VC-416 BOARD (2/12)

LENS DRIVE, EVR

XX MARK:NO MOUNT

NO MARK:REC/PB MODE



VC-416 BOARD (3/12)

DV SIGNAL PROCESS, DV INTERFACE

XX MARK:NO MOUNT

NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE

▲: Voltage measurment of the CSP ICs and the Transistors with▲mark, are not possible.

IC6001
DV SIGNAL PROCESS
IC6001
CXD3164R

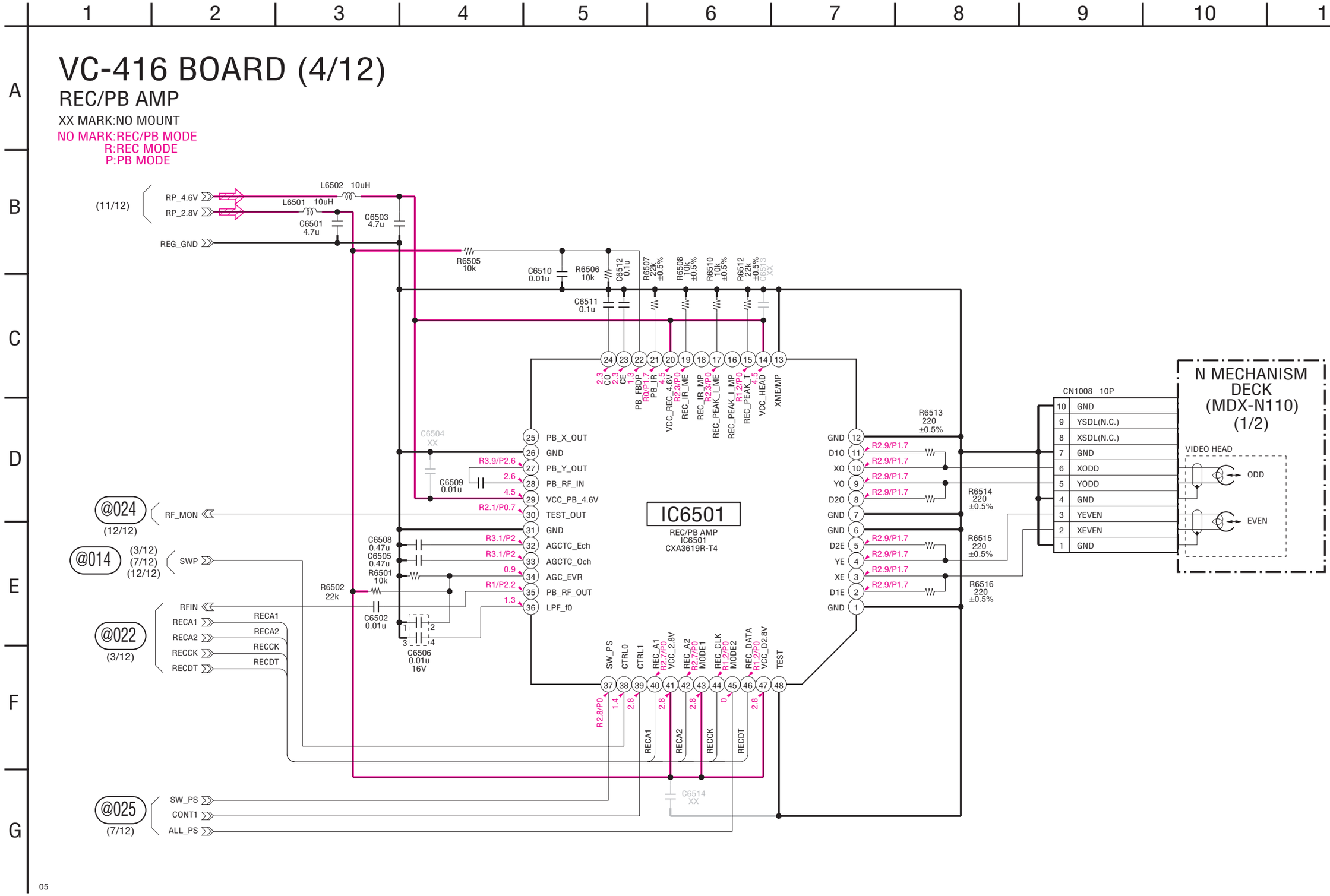
IC6002
DV INTERFACE
IC6002
SN0306037AZVWR

VC-416 BOARD (4/12)

REC/PB AMP

XX MARK:NO MOUNT

NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE



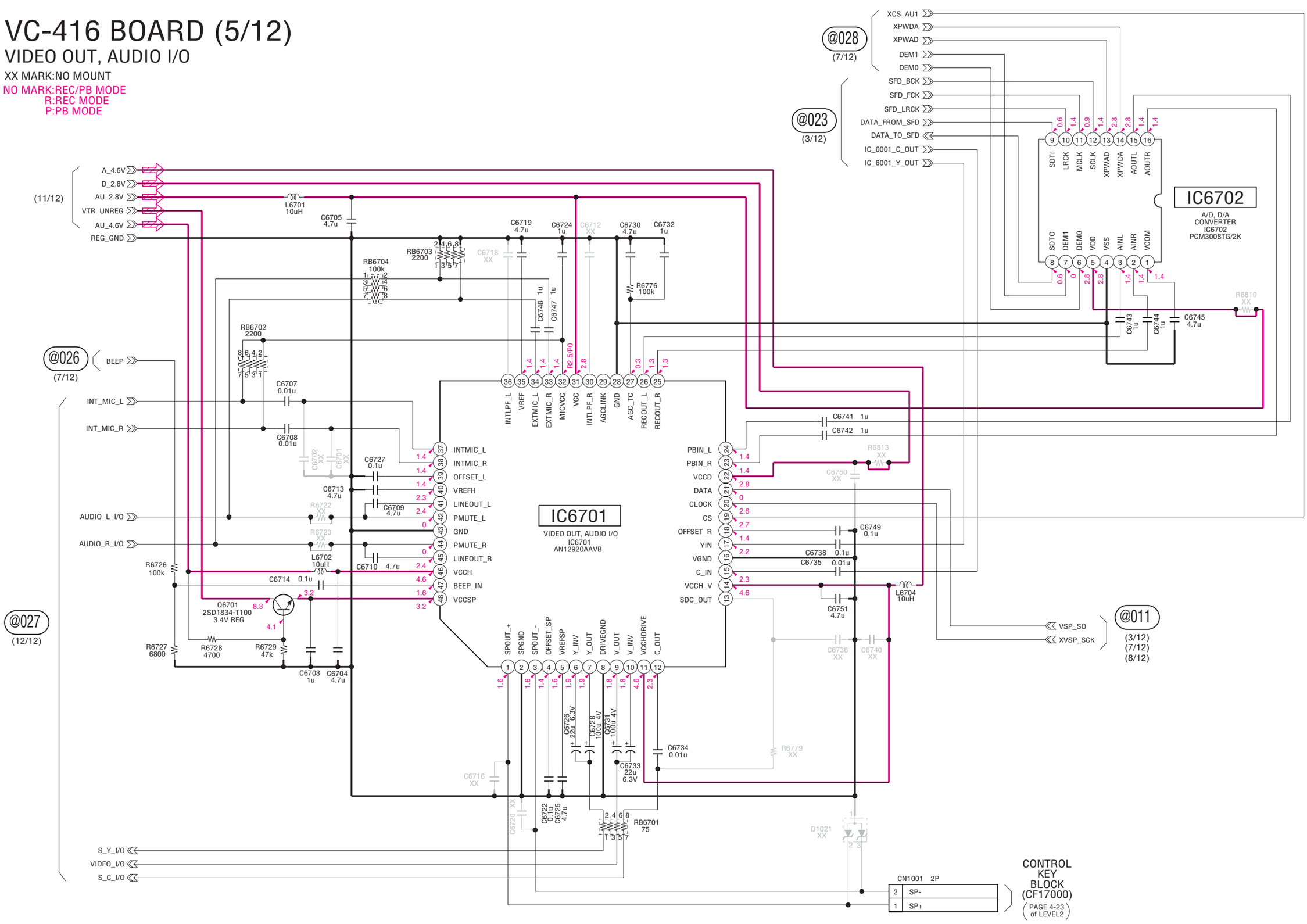
05

VC-416 BOARD (5/12)

VIDEO OUT, AUDIO I/O

XX MARK:NO MOUNT

NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE

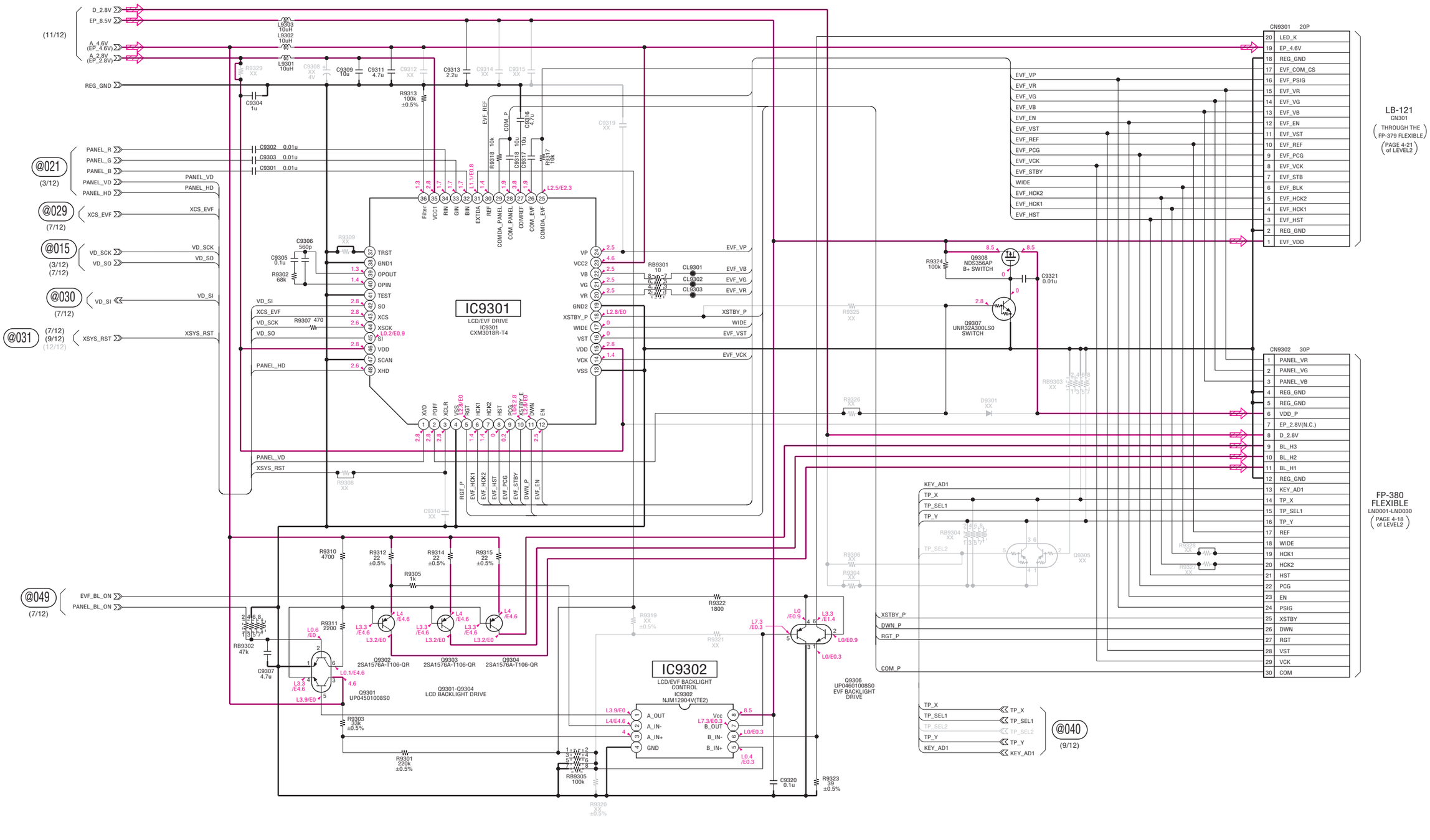


VC-416 BOARD (6/12)

LCD/EVF DRIVE

XX MARK:NO MOUNT

NO MARK:LCD/EVF MODE
L:LCD MODE
E:EVF MODE



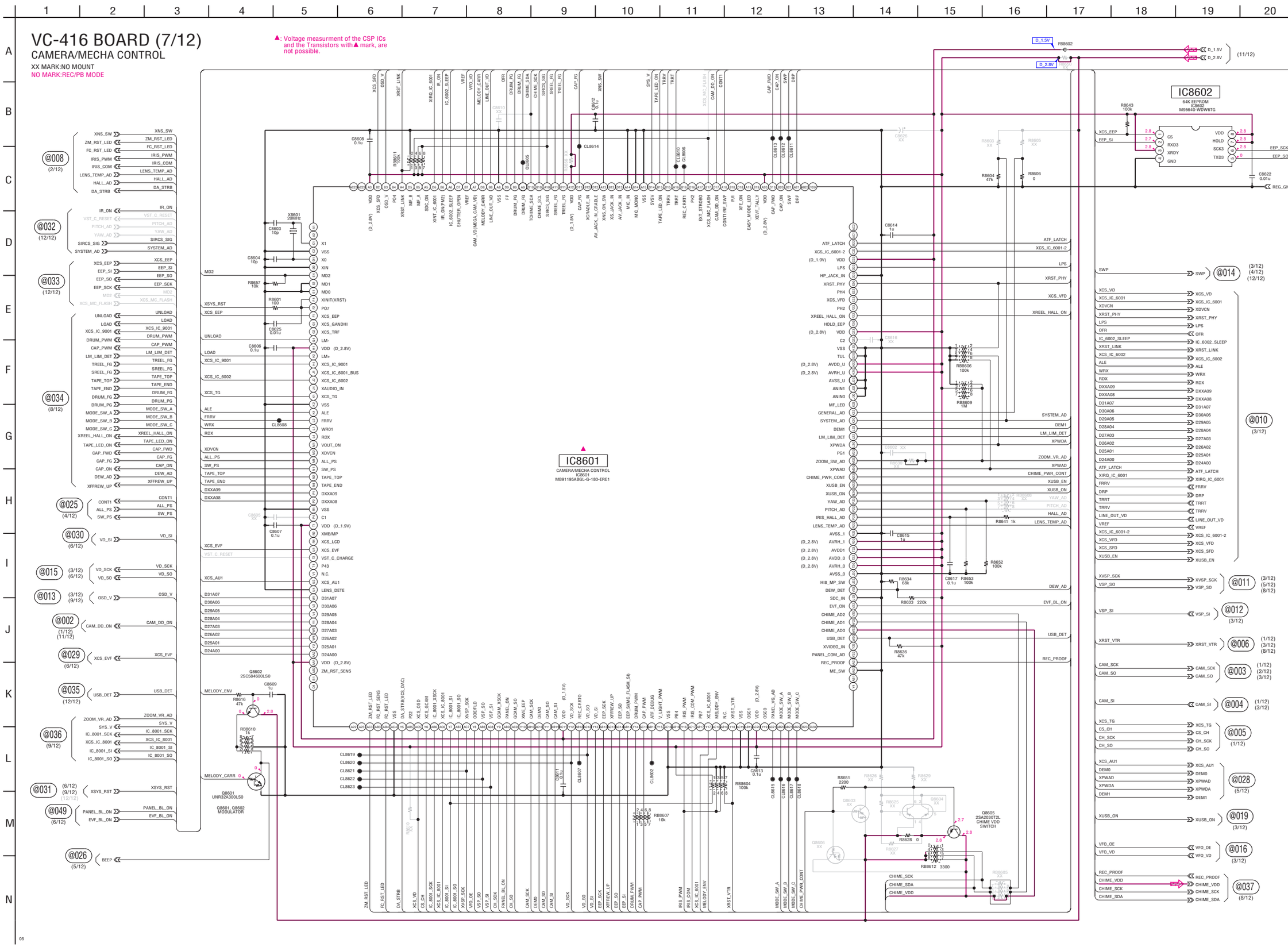
VC-416 BOARD (7/12)

CAMERA/MECHA CONTROL

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

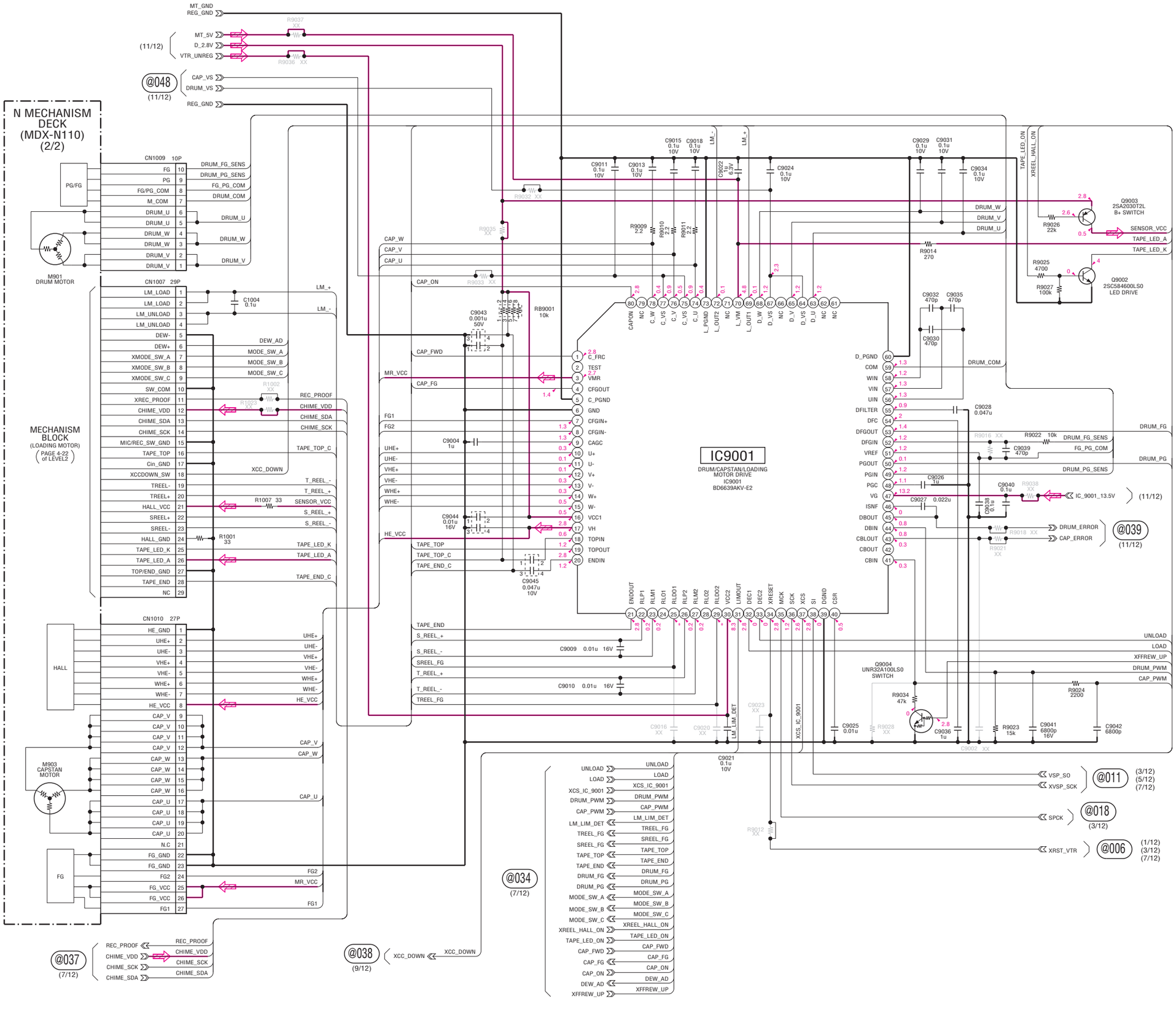
▲: Voltage measurment of the CSP ICs and the Transistors with ▲ mark, are not possible.



VC-416 BOARD (8/12)

SERVO

XX MARK:NO MOUNT
NO MARK:REC/PB MODE
*:IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.



VC-416 BOARD (9/12)

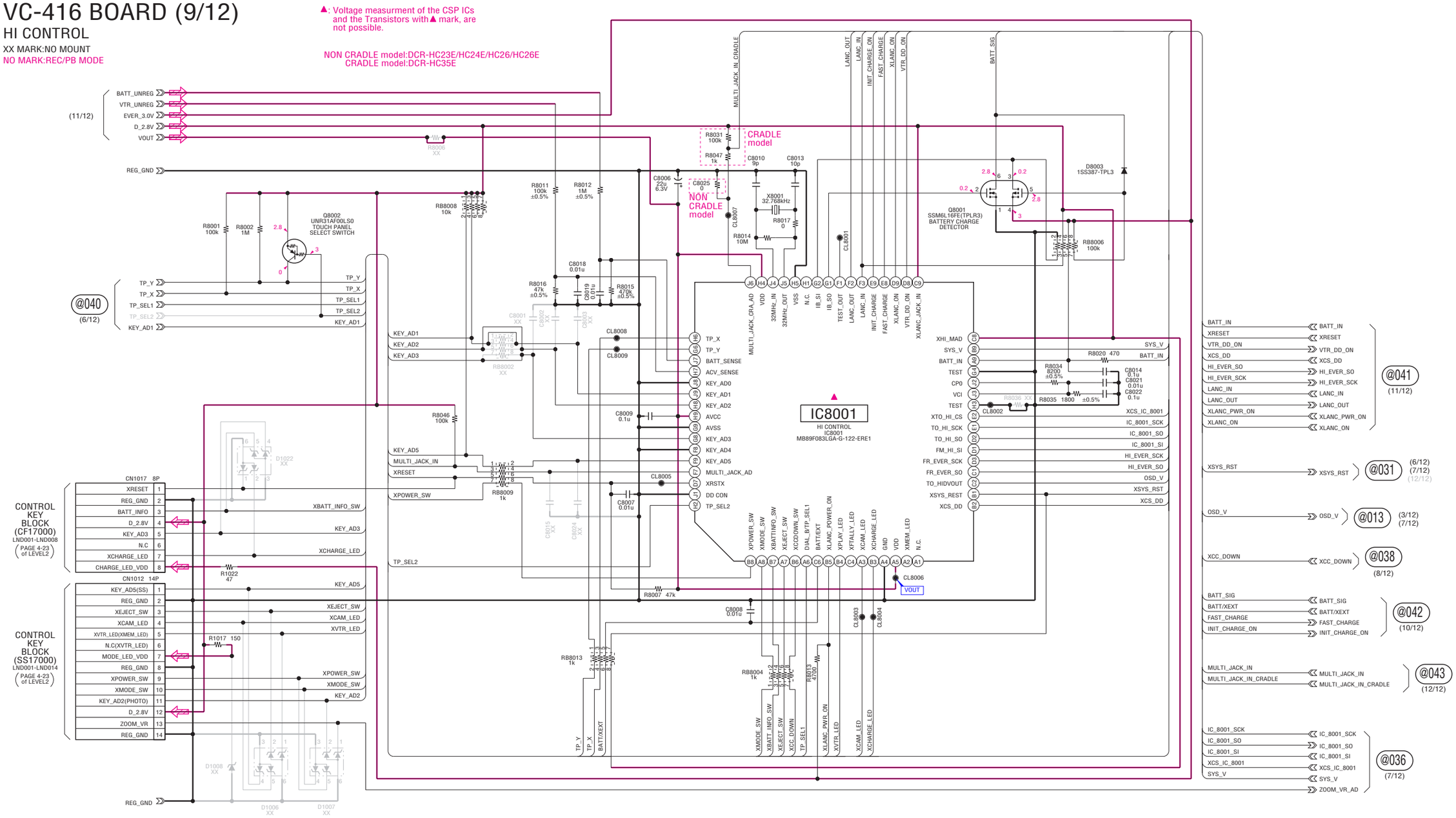
HI CONTROL

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

▲: Voltage measurment of the CSP ICs and the Transistors with▲ mark, are not possible.

NON CRADLE model:DCR-HC23E/HC24E/HC26/HC26E
CRADLE model:DCR-HC35E



• Refer to page 4-3 for mark ⚠.

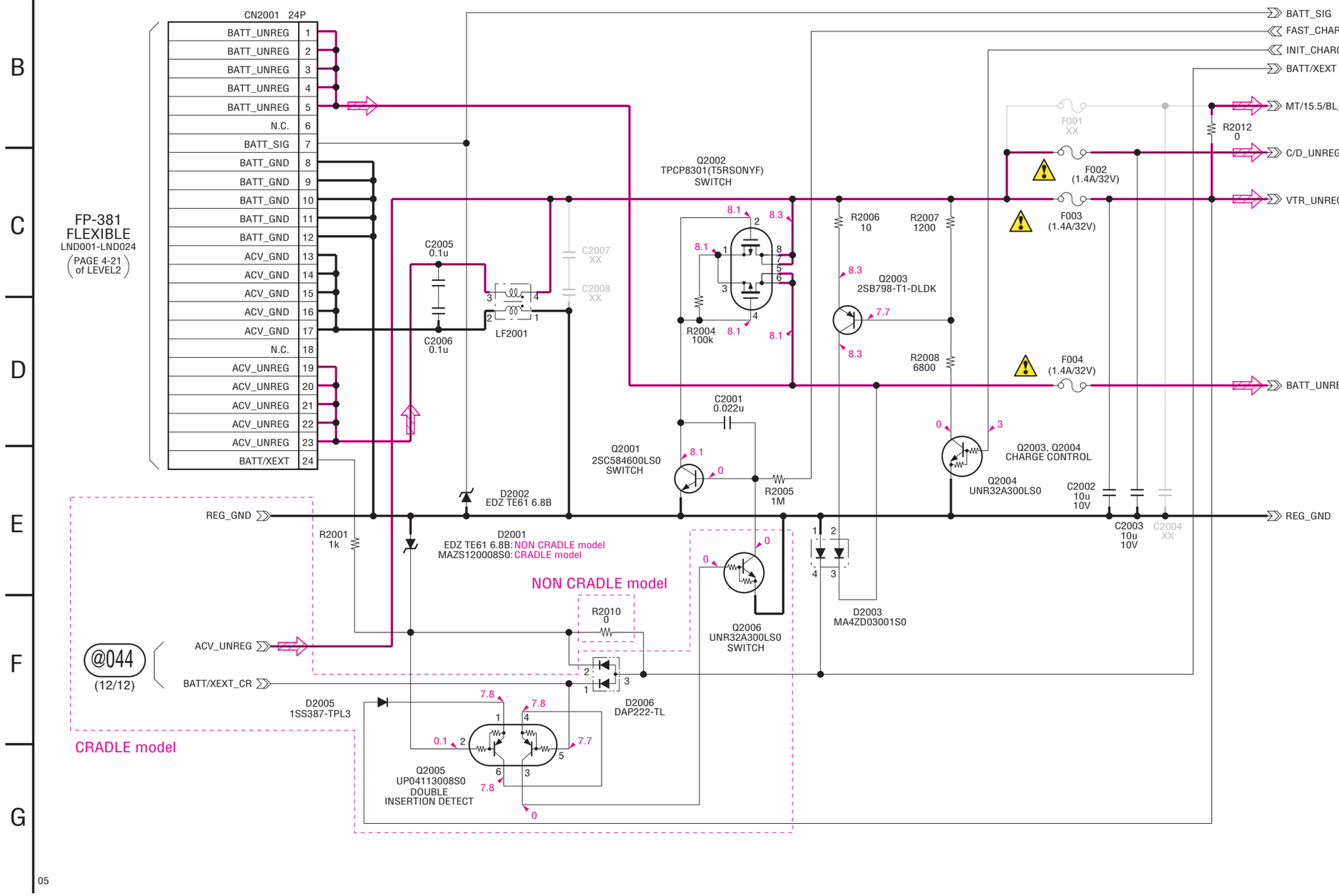
VC-416 BOARD (10/12)

DC IN

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

NON CRADLE model:DCR-HC23E/HC24E/HC26/HC26E
CRADLE model:DCR-HC35E



VC-416 BOARD (11/12)

DC/DC CONVERTER

XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE

▲: Voltage measurement of the CSP ICs and the Transistors with ▲ mark, are not possible.

IC2201
DRUM/CAPSTAN PWM DRIVE, DC CONTROL, RESET, LANC DRIVE
IC2201
MB44A125ALGL-G-ERE1

IC2202
3.1V REG
IC2202
R1114Q311D-TR-FA

VC-416 BOARD (12/12)

CONNECTOR

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

NON CRADLE model:DCR-HC23E/HC24E/HC26/HC26E
CRADLE model:DCR-HC35E

Note: CRADLE model is no connection.

NON CRADLE model

CN1004 36P

USB_DET (Note)	36	
USB_D+ (Note)	35	
USB_D- (Note)	34	
REG_GND	33	
NTPB (Note)	32	
TPB (Note)	31	
NTPA (Note)	30	
TPA (Note)	29	
REG_GND	28	
REG_GND	27	
REG_GND	26	
D_2.8V	25	
NS_LED_K	24	
LI_3V	23	
SIRCS_SIG	22	
SYSTEM_AD	21	
INT_MIC_GND	20	
INT_MIC_L	19	
INT_MIC_R	18	
INT_MIC_GND	17	
REG_GND	16	
S_Y_I/O	15	
S_C_I/O	14	
MULTI_JACK_IN	13	
VIDEO_I/O	12	
REG_GND	11	
LANC_DC	10	
LANC_SIG	9	
REG_GND	8	
AUDIO_R_I/O	7	
AUDIO_L_I/O	6	
VST_C_RESET(N.C.)	5	
YAW_AD(N.C.)	4	
PITCH_AD(N.C.)	3	
A_2.8V(N.C.)	2	
REG_GND	1	

SI-051
CN605
THROUGH THE FLEXIBLE FLAT CABLE (FFC-060)
PAGE 4-20 of LEVEL2

RB1003 0
RB1002 0
R1019 3300 IR_ON
Q1001 2SC5663T2L

USB_DET @035 (7/12)
USB_D+ USB_D- @020 (3/12)
TPB- TPB+ TPA- TPA+ @017 (3/12)
LI_3V @046 (11/12)
SIRCS_SIG
SYSTEM_AD
REG_GND (MIC_GND)
INT_MIC_L INT_MIC_R @027 (5/12)
S_Y_I/O S_C_I/O VIDEO_I/O
MULTI_JACK_IN
AUDIO_R_I/O AUDIO_L_I/O
LANC_DC LANC_SIG @047 (11/12)
VST_C_RESET YAW_AD PITCH_AD
D1024 XX D1025 XX D1018 XX Q1002 XX
RB1005 10k D1023 1SS357(T3SONY1)

CRADLE model

CN1006 36P

USB_DET	1	
USB_D-	2	
USB_D+	3	
REG_GND	4	
NTPB	5	
TPB	6	
NTPA	7	
TPA	8	
REG_GND	9	
VIDEO_I/O	10	
MULTI_JACK_IN	11	
AUDIO_R_I/O	12	
AUDIO_L_I/O	13	
REG_GND	14	
S_Y_I/O	15	
REG_GND	16	
S_C_I/O	17	
REG_GND	18	
LANC_DC	19	
LANC_SIG	20	
BATT/XEXT	21	
ACV_GND	22	
ACV_GND	23	
ACV_GND	24	
ACV_GND	25	
ACV_GND	26	
ACV_GND	27	
ACV_GND	28	
N.C	29	
ACV_UNREG	30	
ACV_UNREG	31	
ACV_UNREG	32	
ACV_UNREG	33	
ACV_UNREG	34	
ACV_UNREG	35	
ACV_UNREG	36	

F1001 XX F1002 XX
D1019 MAZS120008SO
R1020 1k
C1001 0.1u C1002 0.1u
BATT/XEXT_CR REG_GND @044 (10/12)
ACV_UNREG

CR-061
CN003
THROUGH THE FLEXIBLE FLAT CABLE (FFC-060)
PAGE 4-19 of LEVEL2

D_2.8V (NS_2.8V) A_2.8V D_2.8V (12/12)
REG_GND

CN1015 XX

GND	16	
GND	15	
EEP_SI	14	
EEP_SI	13	
EEP_SO	12	
EEP_SO	11	
EEP_SCK	10	
EEP_SCK	9	
XCS_EEP	8	
D_2.8V	7	
GND	6	
MD2	5	
SWP	4	
XCS_MC_FLASH	3	
RF_MON	2	
XSYS_RST	1	

EEP_SI EEP_SO EEP_SCK XCS_EEP @033 (7/12)
RB1004 1k
R1035 XX R1036 XX R1037 XX R1038 XX
MD2
XCS_MC_FLASH
(6/12) (7/12) (9/12) @031 XSYS_RST

CN1014 8P

GND	8
EEP_SI	7
EEP_SO	6
EEP_SCK	5
XCS_EEP	4
GND	3
SWP	2
RF_MON	1

CPC (FOR CHECK)

(3/12) (4/12) (7/12) @014 SWP
@024 (4/12) RF_MON

IR_ON SIRCS_SIG SYSTEM_AD VST_C_RESET YAW_AD PITCH_AD @032 (7/12)

MULTI_JACK_IN @043 (9/12)

05

4-3. PRINTED WIRING BOARDS

Link

- VC-416 BOARD (SIDE A)
- VC-416 BOARD (SIDE B)
- COMMON NOTE FOR PRINTED WIRING BOARDS
- MOUNTED PARTS LOCATION

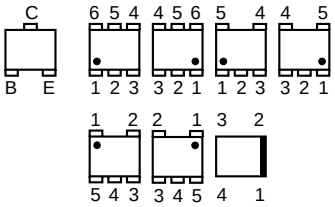
4-3. PRINTED WIRING BOARDS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS

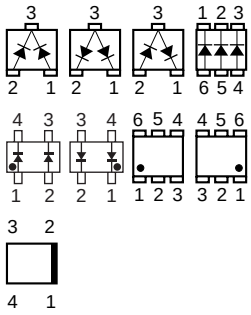
- : Uses unleaded solder.
- : Circuit board
  : Flexible board
  Pattern from the side which enables seeing.
  : pattern of the rear side
  (The other layers' patterns are not indicated)
- Through hole is omitted.
- There are a few cases that the part printed on diagram isn't mounted in this model.
- : panel designation

- Chip parts.

Transistor



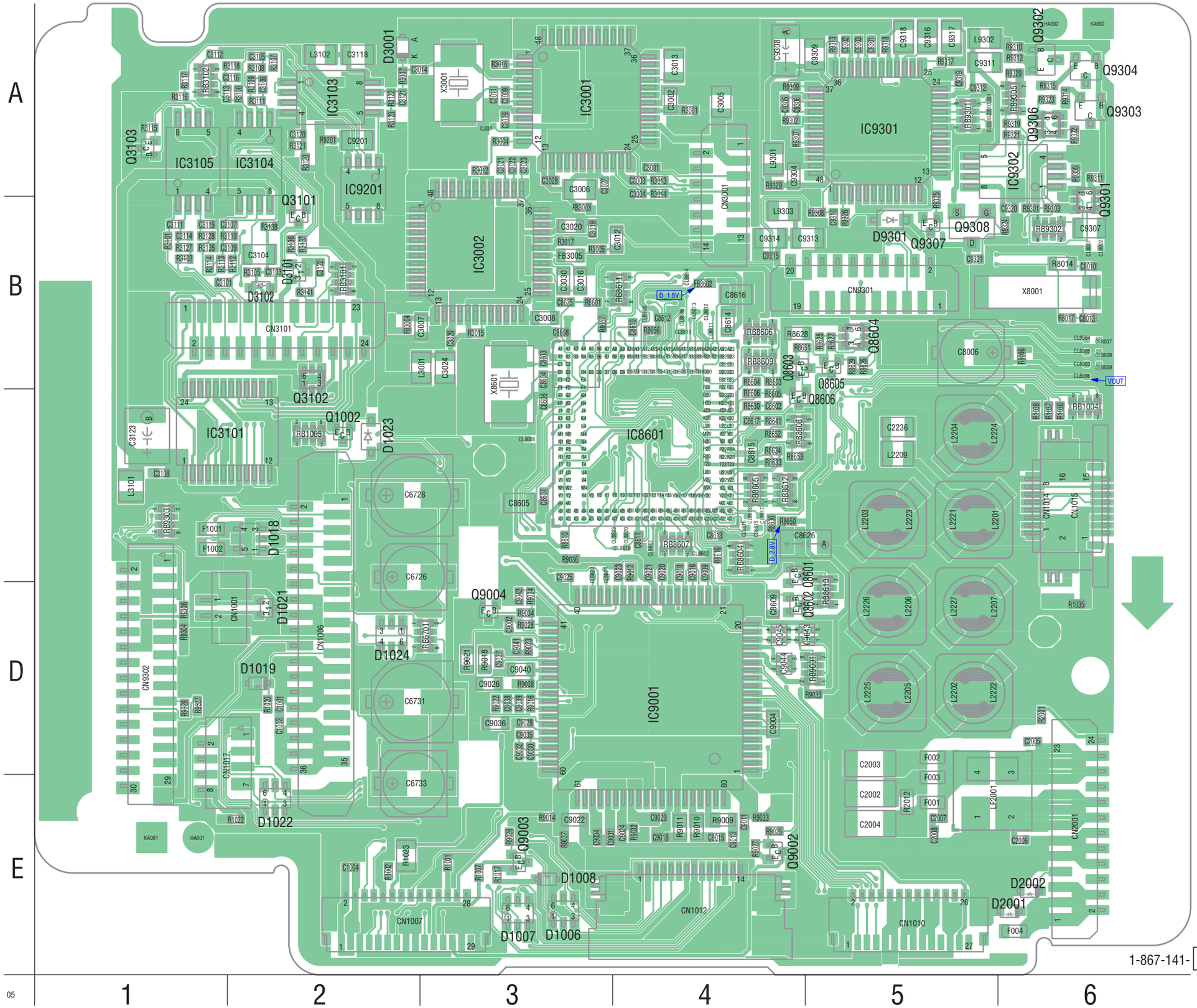
Diode



VC-416 (6 layers)

: Uses unleaded solder.

VC-416 BOARD (SIDE A)



Note: CN1014 (8P) and CN1015 (16P) have the same mount location. When you replace, since either CN1014 or CN1015 is used, please refer to schematic diagram and electrical parts list.

Note: L2201 to L2207 and L2221 to L2227 have the same mount location. When you replace, since either L2201 to L2207 or L2221 to L2227 are used, please refer to schematic diagram and electrical parts list.

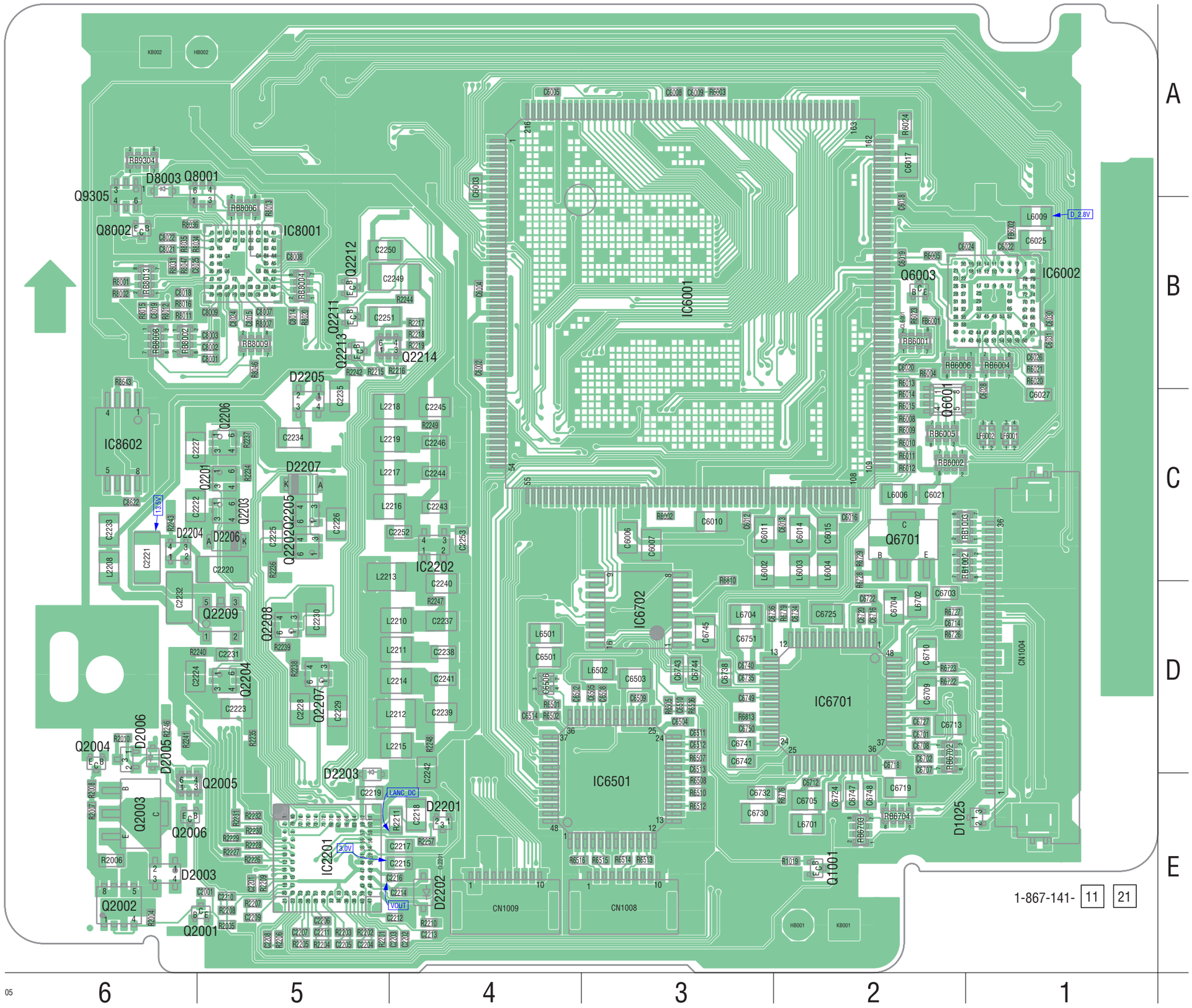
1-867-141-11 21

05

VC-416 (6 layers)

: Uses unleaded solder.

VC-416 BOARD (SIDE B)



4-4. MOUNTED PARTS LOCATION

no mark : side A
* mark : side B

VC-416 BOARD

C1001	D-2	C3113	A-1	C8603	B-3	* D2202	E-4	* Q2006	E-6	* R6004	B-2
C1002	D-2	C3114	B-1	C8604	B-3	* D2203	E-5	* Q2201	C-5	* R6008	C-2
C1004	E-2	C3116	A-2	C8606	C-3	* D2204	C-6	* Q2202	C-5	* R6009	C-2
* C2001	E-5	C3118	A-2	C8607	C-3	* D2205	C-5	* Q2204	D-5	* R6010	C-2
C2002	E-5	C3120	A-2	C8608	B-3	* D2206	C-5	* Q2206	C-5	* R6011	C-2
C2003	D-5	C3123	C-1	C8609	D-4	* D2207	C-5	* Q2207	D-5	* R6012	C-2
C2005	D-6	* C6002	B-4	C8611	C-4	D3001	A-2	* Q2208	D-5	* R6013	B-2
C2006	E-6	* C6003	A-4	C8612	B-4	D3101	B-2	* Q2209	D-5	* R6014	C-2
* C2201	E-5	* C6004	B-4	C8613	C-4	D3102	B-2	* Q2211	B-5	* R6015	C-2
* C2202	E-4	* C6005	A-4	C8614	B-4	* D8003	A-6	* Q2212	B-5	* R6020	B-1
* C2203	E-4	* C6006	C-3	C8615	C-4			* Q2213	B-5	* R6021	B-1
* C2204	E-5	* C6008	A-3	C8617	C-4	F002	D-5	* Q2214	B-5	* R6023	B-2
* C2205	E-5	* C6010	C-3	* C8622	C-6	F003	E-5	Q3101	B-2	* R6024	A-2
* C2206	E-5	* C6011	C-3	C8625	B-3	F004	E-6	Q3102	B-2	* R6501	D-4
* C2207	E-5	* C6012	C-3	C9004	D-4			Q3103	A-1	* R6502	D-4
* C2208	E-5	* C6013	C-2	C9009	C-4	FB3003	B-3	* Q6003	B-2	* R6505	D-3
* C2209	E-5	* C6014	C-2	C9010	C-4	FB3004	B-2	* Q6701	C-2	* R6506	D-3
* C2210	E-5	* C6015	C-2	C9011	E-4	FB3005	B-3	* Q8001	B-5	* R6507	D-3
* C2211	E-5	* C6016	C-2	C9013	E-4	* FB6001	B-2	* Q8002	B-6	* R6508	E-3
* C2212	E-4	* C6017	A-2	C9015	E-4	* FB6002	B-1	Q8601	C-4	* R6510	E-3
* C2213	E-4	* C6018	B-2	C9018	E-4	FB8602	B-4	Q8602	D-4	* R6512	E-3
* C2214	E-4	* C6019	B-2	C9021	C-4			Q8605	B-5	* R6513	E-3
* C2215	E-4	* C6020	B-2	C9022	E-3	* IC2201	E-5	Q9002	E-4	* R6514	E-3
* C2216	E-4	* C6021	C-2	C9024	E-4	* IC2202	C-4	Q9003	E-3	* R6515	E-3
* C2217	E-4	* C6022	B-1	C9025	C-3	IC3001	A-3	Q9004	D-3	* R6516	E-4
* C2218	E-4	* C6024	B-1	C9026	D-3	IC3002	B-3	Q9301	B-6	* R6726	D-2
* C2219	E-5	* C6025	B-1	C9027	D-3	IC3101	C-1	Q9302	A-6	* R6727	D-2
* C2220	C-5	* C6026	B-1	C9028	D-3	IC3103	A-2	Q9303	A-6	* R6728	C-2
* C2221	C-6	* C6027	C-1	C9029	E-4	IC3104	A-2	Q9304	A-6	* R6729	C-2
* C2222	C-6	* C6028	C-1	C9030	D-3	IC3105	A-1	Q9306	A-6	* R6776	E-2
* C2223	D-5	* C6501	D-4	C9031	E-3	* IC6001	B-3	Q9307	B-5	* R8001	B-6
* C2224	D-6	* C6502	D-4	C9032	D-3	* IC6002	B-1	Q9308	B-5	* R8002	B-6
* C2225	C-5	* C6503	D-3	C9034	E-3	* IC6501	E-3			* R8007	B-5
* C2226	C-5	* C6505	D-3	C9035	D-3	* IC6701	D-2	R1001	E-3	* R8011	B-6
* C2227	C-6	* C6506	D-4	C9036	D-3	* IC6702	D-3	R1007	E-3	* R8012	B-6
* C2228	D-5	* C6508	D-3	C9038	D-3	* IC8001	B-5	R1017	E-3	* R8013	B-5
* C2229	D-5	* C6509	D-3	C9039	D-3	IC8601	C-4	* R1019	E-2	R8014	B-6
* C2230	D-5	* C6510	D-3	C9040	D-3	* IC8602	C-6	R1020	D-2	* R8015	B-6
* C2231	D-5	* C6511	D-3	C9041	D-3	IC9001	D-4	R1022	E-2	* R8016	B-6
* C2232	D-6	* C6512	D-3	C9042	D-3	IC9201	A-2	R2001	D-6	R8017	B-6
* C2233	C-6	* C6703	D-2	C9043	D-5	IC9301	A-5	* R2004	E-6	* R8020	B-5
* C2234	C-5	* C6704	D-2	C9044	D-4	IC9302	A-6	* R2005	E-5	* R8031	B-6
* C2235	C-5	* C6705	E-2	C9045	D-4			* R2006	E-6	* R8034	B-6
C2236	C-5	* C6707	D-2	C9201	A-2	L2201	C-5	* R2007	E-6	* R8035	B-6
* C2238	D-4	* C6708	D-2	C9301	A-5	L2202	D-5	* R2008	E-6	* R8046	B-5
* C2239	D-4	* C6709	D-2	C9302	A-5	L2203	C-5	* R2010	D-6	* R8047	B-6
* C2240	D-4	* C6710	D-2	C9303	A-5	L2204	C-5	R2012	E-5	R8601	B-3
* C2241	D-4	* C6713	D-2	C9304	A-4	L2205	D-5	* R2201	E-5	R8604	B-4
* C2243	C-4	* C6714	D-2	C9305	A-4	L2206	D-5	* R2202	E-5	R8606	C-4
* C2244	C-4	* C6719	E-2	C9306	A-4	L2207	D-5	* R2203	E-5	R8616	C-4
* C2246	C-4	* C6722	D-2	C9307	B-6	* L2208	C-6	* R2204	E-5	R8628	B-4
* C2249	B-4	* C6724	E-2	C9309	A-5	L2209	C-5	* R2205	E-5	R8633	C-4
* C2250	B-5	* C6725	D-2	C9311	A-5	* L2211	D-4	* R2206	E-5	R8634	C-4
* C2251	B-5	C6726	C-2	C9313	B-5	* L2212	D-4	* R2207	E-5	R8636	C-4
* C2252	C-4	* C6727	D-2	C9316	A-5	* L2213	C-5	* R2208	E-5	R8641	C-4
* C2253	C-4	C6728	C-2	C9317	A-5	* L2214	D-4	* R2209	E-5	* R8643	B-6
C3001	A-4	* C6730	E-3	C9318	A-5	* L2216	C-4	* R2210	E-4	R8651	B-4
C3002	A-4	C6731	D-2	C9320	B-6	* L2217	C-4	* R2211	E-4	R8652	C-4
C3003	A-4	* C6732	E-3	C9321	B-5	* L2219	C-4	* R2215	B-5	R8653	C-4
C3004	A-4	C6733	E-2			L3001	B-3	* R2216	B-4	R8657	B-3
C3005	A-4	* C6734	D-2	CN1001	D-2	L3101	C-1	* R2217	B-4	R9009	E-4
C3006	A-3	* C6735	D-3	* CN1004	D-1	L3102	A-2	* R2218	B-4	R9010	E-4
C3007	B-3	* C6738	D-3	CN1006	D-2	* L6002	C-3	* R2219	B-4	R9011	E-4
C3009	A-3	* C6741	D-3	CN1007	E-2	* L6003	C-2	R3001	A-4	R9014	E-3
C3012	B-4	* C6742	D-3	* CN1008	E-3	* L6004	C-2	R3005	B-3	R9022	D-3
C3013	A-4	* C6743	D-3	* CN1009	E-4	* L6006	C-2	R3007	A-2	R9023	D-3
C3014	A-2	* C6744	D-3	CN1010	E-5	* L6009	B-1	R3106	A-2	R9024	D-3
C3016	B-3	* C6745	D-3	CN1012	E-4	* L6501	D-4	R3107	A-2	R9025	E-4
C3019	B-3	* C6747	E-2	CN1014	C-6	* L6502	D-3	R3108	A-2	R9026	E-3
C3020	B-3	* C6748	E-2	CN1017	D-1	* L6701	E-2	R3109	A-2	R9027	E-4
C3021	A-3	* C6749	D-3	CN2001	E-6	* L6702	D-2	R3110	B-2	R9034	D-3
C3022	A-3	* C6751	D-3	CN3001	B-4	* L6704	D-3	R3111	A-2	R9301	B-6
C3023	A-3	C8006	B-5	CN3101	B-2	L9301	A-4	R3113	B-1	R9302	A-4
C3024	B-3	* C8007	B-5	CN9301	B-5	L9302	A-5	R3114	B-1	R9303	B-6
C3026	B-3	* C8008	B-5	CN9302	D-1	L9303	B-4	R3115	A-1	R9305	A-6
C3101	B-1	* C8009	B-5					R3116	A-1	R9307	A-4
C3103	B-2	C8010	B-6	D1019	D-2	LF2001	E-5	R3117	A-1	R9310	A-6
C3104	B-2	C8013	B-6	D1023	C-2			R3118	A-2	R9311	A-6
C3105	A-2	* C8014	B-5	D2001	E-6	* Q1001	E-2	R3120	A-2	R9312	A-6
C3106	A-2	* C8018	B-6	D2002	E-6	* Q2001	E-5	R3121	A-2	R9313	A-5
C3107	B-2	* C8019	B-6	* D2003	E-6	* Q2002	E-6	R3122	A-2	R9314	A-6
C3109	B-2	* C8021	B-6	* D2005	D-6	* Q2003	E-6	R3123	A-2	R9315	A-6
C3111	B-1	* C8022	B-6	* D2006	D-6	* Q2004	D-6	R3127	B-1	R9317	A-5
C3112	A-1	* C8025	B-6	* D2201	E-4	* Q2005	E-6	R3128	B-1	R9318	A-5

4-3. PRINTED WIRING BOARDS

no mark : side A
* mark : side B

R9322 A-6
R9323 A-6
R9324 B-6

* RB1002 C-2
* RB1003 C-2
RB1004 C-6
RB1005 C-2
RB3101 B-2
RB3102 A-1
* RB6001 B-2
* RB6004 B-1
* RB6006 B-2
RB6701 D-3
* RB6702 D-2
* RB6703 E-2
* RB6704 E-2
* RB8004 B-5
* RB8006 B-5
* RB8008 B-6
* RB8009 B-5
* RB8013 B-6
RB8604 C-4
RB8606 B-4
RB8607 C-4
RB8609 B-4
RB8610 D-5
RB8611 B-4
RB8612 C-4
RB9001 D-5
RB9301 A-5
RB9302 B-6
RB9305 A-6

X3001 A-3
X8001 B-6
X8601 B-3

5. REPAIR PARTS LIST

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- CAPACITORS:
  uF: µF
- COILS
  uH: µH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

- Abbreviation
  AR : Argentine model
  AUS : Australian model
  BR : Brazilian model
  CH : Chinese model
  CND : Canadian model
  EE : East European model
  HK : Hong Kong model
  J : Japanese model
  JE : Tourist model
  KR : Korea model
  NE : North European model

5-2. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description			
	A-1154-404-A	VC-416 BOARD, COMPLETE (SERVICE) (HC23E/HC24E/HC26/HC26E)			
	A-1154-405-A	VC-416 BOARD, COMPLETE (SERVICE) (HC35E)			
		**********			
		< CAPACITOR >			
C1001	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V (HC35E)
C1002	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V (HC35E)
C1004	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2001	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C2002	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C2003	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C2005	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2006	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2201	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2202	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C2203	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2204	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C2205	1-164-941-11	CERAMIC CHIP	0.0047uF	10%	16V
C2206	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C2207	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C2208	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C2209	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C2210	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2211	1-164-882-11	CERAMIC CHIP	220PF	5%	16V
C2212	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2213	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2214	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2215	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2216	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2217	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2218	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C2219	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2220	1-127-861-11	CERAMIC CHIP	2.2uF	10%	16V
C2221	1-127-861-11	CERAMIC CHIP	2.2uF	10%	16V
C2222	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2223	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C2224	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2225	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C2226	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2227	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2228	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C2229	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C2230	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2231	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C2232	1-127-820-11	CERAMIC CHIP	4.7uF	10%	16V
C2233	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C2234	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C2235	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C2236	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2238	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C2239	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2240	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2241	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C2243	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C2244	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C2246	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C2249	1-127-820-11	CERAMIC CHIP	4.7uF	10%	16V
C2250	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C2251	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C2252	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2253	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3001	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C3002	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V
C3003	1-164-870-11	CERAMIC CHIP	68PF	5%	50V
C3004	1-164-870-11	CERAMIC CHIP	68PF	5%	50V
C3005	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C3006	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3007	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3009	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C3012	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3013	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C3014	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C3016	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V
C3019	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3020	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3021	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3022	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3023	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3024	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C3026	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3101	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C3103	1-164-941-11	CERAMIC CHIP	0.0047uF	10%	16V
C3104	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3105	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3106	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3107	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C3109	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C3111	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C3112	1-100-415-11	CERAMIC CHIP	0.47uF	10%	6.3V
C3113	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C3114	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C3116	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C3118	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3120	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3123	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C6002	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6003	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6004	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6005	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6006	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6008	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6010	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6011	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6012	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6013	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6014	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6015	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6016	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6017	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V

Ref. No.	Part No.	Description			
C6018	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6019	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6020	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6021	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6022	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6024	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C6025	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6026	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6027	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6028	1-164-882-11	CERAMIC CHIP	220PF	5%	16V
C6501	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6502	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6503	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6505	1-100-415-11	CERAMIC CHIP	0.47uF	10%	6.3V
C6506	1-100-249-11	CERAMIC CHIP	0.01uF	10%	16V
C6508	1-100-415-11	CERAMIC CHIP	0.47uF	10%	6.3V
C6509	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6510	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6511	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6512	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6703	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6704	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6705	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6707	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6708	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6709	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6710	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6713	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6714	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6719	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6722	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6724	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6725	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6726	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C6727	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6728	1-126-209-11	ELECT CHIP	100uF	20%	4V
C6730	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6731	1-126-209-11	ELECT CHIP	100uF	20%	4V
C6732	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6733	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C6734	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6735	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6738	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C6741	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6742	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6743	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6744	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6745	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6747	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6748	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6749	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6751	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C8006	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C8007	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C8008	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C8009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8010	1-164-849-11	CERAMIC CHIP	9PF	0.5PF	50V

Ref. No.	Part No.	Description			
C8013	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C8014	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8018	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C8019	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C8021	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C8022	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8025	1-218-990-81	SHORT CHIP	0 (HC23E/HC24E/HC26/HC26E)		
C8603	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C8604	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C8606	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8607	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8608	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8609	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C8611	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8612	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8613	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8614	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C8615	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C8617	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8622	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C8625	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C9004	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C9009	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C9010	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C9011	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C9013	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C9015	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C9018	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C9021	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C9022	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C9024	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C9025	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C9026	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C9027	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C9028	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C9029	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C9030	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C9031	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C9032	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C9034	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C9035	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C9036	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C9038	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C9039	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C9040	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C9041	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
C9042	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
C9043	1-100-246-11	CERAMIC CHIP	0.001uF	10%	50V
C9044	1-100-249-11	CERAMIC CHIP	0.01uF	10%	16V
C9045	1-100-251-11	CERAMIC CHIP	0.047uF	10%	10V
C9201	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C9301	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C9302	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C9303	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C9304	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C9305	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
* C9306	1-100-741-81	CERAMIC CHIP	560PF	5%	50V

Ref. No.	Part No.	Description			
C9307	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C9309	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C9311	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C9313	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C9316	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C9317	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C9318	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C9320	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C9321	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
		< CONNECTOR >			
CN1001	1-794-057-21	PIN, CONNECTOR (PC BOARD) 2P			
CN1004	1-818-073-51	FFC/CONNECTOR, FPC (ZIF) 36P			
CN1006	1-818-074-51	CONNECTOR, FFC/FPC (ZIF) 36P (HC35E)			
* CN1007	1-818-818-51	CONNECTOR, FPC (ZIF) 29P			
* CN1008	1-818-043-51	CONNECTOR, FFC/FPC 10P			
* CN1009	1-818-043-51	CONNECTOR, FFC/FPC 10P			
* CN1010	1-817-829-51	CONNECTOR, FPC (ZIF) 27P			
* CN1012	1-820-069-51	CONNECTOR, FFC/FPC (ZIF) 14P			
CN1014	1-766-338-51	CONNECTOR, FFC/FPC 8P			
CN1017	1-779-328-51	CONNECTOR, FFC/FPC 8P			
* CN2001	1-815-763-51	CONNECTOR, FFC/FPC 24P			
CN3001	1-779-331-51	CONNECTOR, FFC/FPC 14P			
* CN3101	1-815-763-51	CONNECTOR, FFC/FPC 24P			
CN9301	1-779-334-51	CONNECTOR, FFC/FPC 20P			
CN9302	1-779-339-51	CONNECTOR, FFC/FPC 30P			
		< DIODE >			
D1019	8-719-056-59	DIODE	MAZS120008SO (HC35E)		
D1023	8-719-078-02	DIODE	1SS357 (T3SONY1) (HC35E)		
D2001	8-719-056-59	DIODE	MAZS120008SO (HC35E)		
D2001	8-719-083-91	DIODE	EDZ TE61 6.8B (HC23E/HC24E/HC26/HC26E)		
D2002	8-719-083-91	DIODE	EDZ TE61 6.8B		
D2003	8-719-074-08	DIODE	MA4ZD03001S0		
D2005	8-719-056-23	DIODE	MA2S111-(K8).SO (HC35E)		
D2006	8-719-991-00	DIODE	DAP222 (HC35E)		
D2201	6-500-314-01	DIODE	DAN222MT2L		
D2202	8-719-078-02	DIODE	1SS357 (T3SONY1)		
D2203	8-719-071-34	DIODE	RB521S-30-TE61		
D2204	6-500-168-01	DIODE	MA4SD1000LS0		
D2205	8-719-074-08	DIODE	MA4ZD03001S0		
D2206	6-501-125-01	DIODE	MA21D3400LS0		
D2207	6-501-125-01	DIODE	MA21D3400LS0		
D3001	8-719-082-63	DIODE	1SV329 (TPL3)		
D3101	6-500-908-01	DIODE	DF3A3.3FV (TL3SONY)		
D3102	8-719-056-23	DIODE	MA2S111-(K8).SO		
D8003	8-719-056-23	DIODE	MA2S111-(K8).SO		
		< FUSE >			
⚠F002	1-576-406-21	FUSE (1.4A/32V)			
⚠F003	1-576-406-21	FUSE (1.4A/32V)			
⚠F004	1-576-406-21	FUSE (1.4A/32V)			
		< FERRITE BEAD >			
FB3003	1-400-331-11	FERRITE, EMI (SMD) (1005)			
FB3004	1-400-331-11	FERRITE, EMI (SMD) (1005)			
FB3005	1-500-283-11	INDUCTOR, FERRITE BEAD			
FB6001	1-400-331-11	FERRITE, EMI (SMD) (1005)			
FB6002	1-400-331-11	FERRITE, EMI (SMD) (1005)			
FB8602	1-400-331-11	FERRITE, EMI (SMD) (1005)			
		< IC >			
IC2201	6-707-649-01	IC	MB44A125ALGL-G-ERE1		
* IC2202	6-708-446-01	IC	R1114Q311D-TR-FA		
IC3001	8-752-417-70	IC	CXD2444AR-T4		
IC3002	6-705-651-01	IC	VSP995PTR		
IC3101	8-759-637-96	IC	uPD16877MA-6A5-E2		
IC3103	8-759-693-13	IC	NJM12904V (TE2)		
IC3104	8-759-693-13	IC	NJM12904V (TE2)		
IC3105	8-759-693-13	IC	NJM12904V (TE2)		
IC6001	8-752-418-16	IC	CXD3164R		
* IC6002	6-709-272-01	IC	SN0306037AZVWR		
IC6501	8-752-106-95	IC	CXA3619R-T4		
* IC6701	6-707-959-01	IC	AN12920AAVB		
IC6702	8-759-647-71	IC	AK4550VT-E2		
* IC8001	6-806-185-01	IC	MB89083LGA-G-122-ERE1		
* IC8601	6-806-179-01	IC	MB91195ABGL-G-180-ERE1		
IC8602	6-705-177-01	IC	M95640-WDW6TG		
IC9001	6-705-676-01	IC	TB6550FG (O, EB)		
IC9201	6-706-663-01	IC	NJW5210RB1		
* IC9301	8-753-242-24	IC	CXM3018R-T4		
IC9302	8-759-693-13	IC	NJM12904V (TE2)		
		< COIL >			
L2201	1-456-137-11	INDUCTOR	22uH		
L2202	1-456-137-11	INDUCTOR	22uH		
L2203	1-456-137-11	INDUCTOR	22uH		
L2204	1-456-138-11	INDUCTOR	33uH		
L2205	1-456-137-11	INDUCTOR	22uH		
L2206	1-456-138-11	INDUCTOR	33uH		
L2207	1-456-138-11	INDUCTOR	33uH		
L2208	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L2209	1-469-553-21	INDUCTOR	4.7uH		
L2211	1-469-553-21	INDUCTOR	4.7uH		
L2212	1-400-784-21	INDUCTOR	4.7uH		
L2213	1-400-784-21	INDUCTOR	4.7uH		
L2214	1-469-553-21	INDUCTOR	4.7uH		
L2216	1-469-553-21	INDUCTOR	4.7uH		
L2217	1-469-553-21	INDUCTOR	4.7uH		
L2219	1-469-553-21	INDUCTOR	4.7uH		
L3001	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L3101	1-469-553-21	INDUCTOR	4.7uH		
L3102	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L6002	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L6003	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L6004	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L6006	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L6009	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L6501	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L6502	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L6701	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L6702	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L6704	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L9301	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		

• Refer to page 5-1 for mark ⚠.

Ref. No.	Part No.	Description			
L6701	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L6702	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L6704	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L9301	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L9302	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
L9303	1-400-588-11	INDUCTOR, LAMINATE CHIP	10uH		
		< LINE FILTER >			
LF2001	1-456-681-21	COIL, CHOKE			
		< TRANSISTOR >			
Q1001	6-550-102-01	TRANSISTOR	2SC5663T2L		
Q2001	6-550-237-01	TRANSISTOR	2SC5658T2LQ/R		
Q2002	6-551-442-01	TRANSISTOR	TPCP8301 (T5RSONYF)		
Q2003	8-729-101-07	TRANSISTOR	2SB798-DL		
Q2004	6-550-234-01	TRANSISTOR	UNR32A300LS0		
Q2005	8-729-054-88	TRANSISTOR	UP04113008S0 (HC35E)		
Q2006	6-550-234-01	TRANSISTOR	UNR32A300LS0 (HC35E)		
Q2201	6-550-714-01	TRANSISTOR	SCH1406-TL-E		
Q2202	6-550-714-01	TRANSISTOR	SCH1406-TL-E		
Q2204	6-550-813-01	TRANSISTOR	SCH2806-TL-E		
Q2206	6-550-813-01	TRANSISTOR	SCH2806-TL-E		
Q2207	6-550-813-01	TRANSISTOR	SCH2806-TL-E		
Q2208	6-550-813-01	TRANSISTOR	SCH2806-TL-E		
Q2209	6-550-560-01	TRANSISTOR	CPH5819-TL-E		
Q2211	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q2212	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q2213	6-550-237-01	TRANSISTOR	2SC5658T2LQ/R		
Q2214	8-729-054-49	TRANSISTOR	UP04401008S0		
Q3101	6-550-758-01	TRANSISTOR	DTC113TMT2L		
Q3102	8-729-054-51	TRANSISTOR	UP04116008S0		
Q3103	6-550-237-01	TRANSISTOR	2SC5658T2LQ/R		
Q6003	6-550-239-01	TRANSISTOR	DTA144EMT2L		
Q6701	8-729-921-51	TRANSISTOR	2SD1834-T100		
Q8001	6-551-345-01	TRANSISTOR	SSM6L16FE (TPLR3)		
Q8002	6-551-338-01	TRANSISTOR	UNR31AF00LS0		
Q8601	6-550-234-01	TRANSISTOR	UNR32A300LS0		
Q8602	6-550-237-01	TRANSISTOR	2SC5658T2LQ/R		
Q8605	6-550-174-01	TRANSISTOR	2SA2030T2L		
Q9002	6-550-237-01	TRANSISTOR	2SC5658T2LQ/R		
Q9003	6-550-174-01	TRANSISTOR	2SA2030T2L		
Q9004	6-550-242-01	TRANSISTOR	DTC114EMT2L		
Q9301	8-729-054-50	TRANSISTOR	UP04501008S0		
Q9302	8-729-026-53	TRANSISTOR	2SA1576A-T106-QR		
Q9303	8-729-026-53	TRANSISTOR	2SA1576A-T106-QR		
Q9304	8-729-026-53	TRANSISTOR	2SA1576A-T106-QR		
Q9306	8-729-054-48	TRANSISTOR	UP04601008S0		
Q9307	6-550-234-01	TRANSISTOR	UNR32A300LS0		
Q9308	8-729-041-23	TRANSISTOR	NDS356AP		
		< RESISTOR >			
R1001	1-218-935-11	RES-CHIP	33	5%	1/16W
R1007	1-218-935-11	RES-CHIP	33	5%	1/16W
R1017	1-218-943-11	RES-CHIP	150	5%	1/16W
R1019	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R1020	1-218-953-11	RES-CHIP	1K	5%	1/16W (HC35E)

Ref. No.	Part No.	Description			
R1022	1-218-937-11	RES-CHIP	47	5%	1/16W
R2001	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2004	1-218-977-11	RES-CHIP	100K	5%	1/16W
R2005	1-218-989-11	RES-CHIP	1M	5%	1/16W
R2006	1-216-797-11	METAL CHIP	10	5%	1/10W
R2007	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R2008	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R2010	1-218-990-81	SHORT CHIP	0 (HC23E/HC24E/HC26/HC26E)		
R2012	1-216-864-11	SHORT CHIP	0		
R2201	1-208-929-81	METAL CHIP	56K	0.5%	1/16W
R2202	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2203	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R2204	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2205	1-218-969-11	RES-CHIP	22K	5%	1/16W
R2206	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2207	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2208	1-218-974-11	RES-CHIP	56K	5%	1/16W
R2209	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2210	1-218-941-81	RES-CHIP	100	5%	1/16W
R2211	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R2215	1-218-977-11	RES-CHIP	100K	5%	1/16W
R2216	1-218-969-11	RES-CHIP	22K	5%	1/16W
R2217	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R2218	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R2219	1-208-943-11	METAL CHIP	220K	0.5%	1/16W
R3001	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3005	1-218-937-11	RES-CHIP	47	5%	1/16W
R3007	1-218-985-11	RES-CHIP	470K	5%	1/16W
R3106	1-218-989-11	RES-CHIP	1M	5%	1/16W
R3107	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R3108	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3109	1-218-981-11	RES-CHIP	220K	5%	1/16W
R3110	1-218-985-11	RES-CHIP	470K	5%	1/16W
R3111	1-218-985-11	RES-CHIP	470K	5%	1/16W
R3113	1-218-967-11	RES-CHIP	15K	5%	1/16W
R3114	1-218-985-11	RES-CHIP	470K	5%	1/16W
R3115	1-218-947-11	RES-CHIP	330	5%	1/16W
R3116	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3117	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3118	1-218-973-11	RES-CHIP	47K	5%	1/16W
R3120	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R3121	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R3122	1-218-983-11	RES-CHIP	330K	5%	1/16W
R3123	1-218-985-11	RES-CHIP	470K	5%	1/16W
R3127	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3128	1-218-953-11	RES-CHIP	1K	5%	1/16W
R6004	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R6008	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6009	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6010	1-218-951-11	RES-CHIP	680	5%	1/16W
R6011	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R6012	1-218-946-11	RES-CHIP	270	5%	1/16W
R6013	1-208-675-11	METAL CHIP	470	0.5%	1/16W
R6014	1-208-675-11	METAL CHIP	470	0.5%	1/16W
R6015	1-208-675-11	METAL CHIP	470	0.5%	1/16W
R6020	1-208-866-11	METAL CHIP	130	0.5%	1/16W
R6021	1-208-702-11	METAL CHIP	6.2K	0.5%	1/16W

VC-416

Ref. No.	Part No.	Description			
R6505	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6506	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6507	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R6508	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R6510	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R6512	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R6513	1-218-945-11	RES-CHIP	220	5%	1/16W
R6514	1-218-945-11	RES-CHIP	220	5%	1/16W
R6515	1-218-945-11	RES-CHIP	220	5%	1/16W
R6516	1-218-945-11	RES-CHIP	220	5%	1/16W
R6726	1-218-977-11	RES-CHIP	100K	5%	1/16W
R6727	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R6728	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R6729	1-218-973-11	RES-CHIP	47K	5%	1/16W
R6776	1-218-977-11	RES-CHIP	100K	5%	1/16W
R8001	1-218-977-11	RES-CHIP	100K	5%	1/16W
R8002	1-218-989-11	RES-CHIP	1M	5%	1/16W
R8007	1-218-973-11	RES-CHIP	47K	5%	1/16W
R8011	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R8012	1-218-989-11	RES-CHIP	1M	5%	1/16W
R8013	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R8014	1-219-570-11	METAL CHIP	10M	5%	1/10W
R8015	1-218-985-11	RES-CHIP	470K	5%	1/16W
R8016	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R8017	1-218-990-81	SHORT CHIP	0		
R8020	1-218-949-11	RES-CHIP	470	5%	1/16W
R8031	1-218-977-11	RES-CHIP	100K	5%	1/16W (HC35E)
R8034	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R8035	1-208-893-11	METAL CHIP	1.8K	0.5%	1/16W
R8046	1-218-977-11	RES-CHIP	100K	5%	1/16W
R8047	1-218-953-11	RES-CHIP	1K	5%	1/16W (HC35E)
R8601	1-218-941-81	RES-CHIP	100	5%	1/16W
R8604	1-218-973-11	RES-CHIP	47K	5%	1/16W
R8606	1-218-990-81	SHORT CHIP	0		
R8616	1-218-973-11	RES-CHIP	47K	5%	1/16W
R8628	1-216-864-11	SHORT CHIP	0		
R8633	1-218-981-11	RES-CHIP	220K	5%	1/16W
R8634	1-218-975-11	RES-CHIP	68K	5%	1/16W
R8636	1-218-973-11	RES-CHIP	47K	5%	1/16W
R8641	1-218-953-11	RES-CHIP	1K	5%	1/16W
R8643	1-218-977-11	RES-CHIP	100K	5%	1/16W
R8651	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R8652	1-218-977-11	RES-CHIP	100K	5%	1/16W
R8653	1-218-977-11	RES-CHIP	100K	5%	1/16W
R8657	1-218-965-11	RES-CHIP	10K	5%	1/16W
R9009	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R9010	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R9011	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R9014	1-218-946-11	RES-CHIP	270	5%	1/16W
R9022	1-218-965-11	RES-CHIP	10K	5%	1/16W
R9023	1-218-967-11	RES-CHIP	15K	5%	1/16W
R9024	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R9025	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R9026	1-218-969-11	RES-CHIP	22K	5%	1/16W
R9027	1-218-977-11	RES-CHIP	100K	5%	1/16W
R9034	1-218-973-11	RES-CHIP	47K	5%	1/16W

Ref. No.	Part No.	Description			
R9301	1-208-943-11	METAL CHIP	220K	0.5%	1/16W
R9302	1-218-975-11	RES-CHIP	68K	5%	1/16W
R9303	1-208-923-11	METAL CHIP	33K	0.5%	1/16W
R9305	1-218-953-11	RES-CHIP	1K	5%	1/16W
R9307	1-218-949-11	RES-CHIP	470	5%	1/16W
R9310	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R9311	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R9312	1-208-643-11	METAL CHIP	22	0.5%	1/16W
R9313	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R9314	1-208-643-11	METAL CHIP	22	0.5%	1/16W
R9315	1-208-643-11	METAL CHIP	22	0.5%	1/16W
R9317	1-218-965-11	RES-CHIP	10K	5%	1/16W
R9318	1-218-965-11	RES-CHIP	10K	5%	1/16W
R9322	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R9323	1-220-884-81	METAL CHIP	39	0.5%	1/16W
R9324	1-218-977-11	RES-CHIP	100K	5%	1/16W

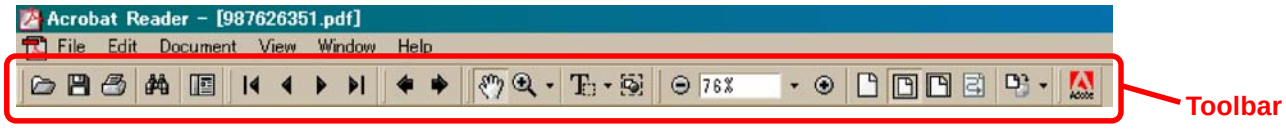
< COMPOSITION CIRCUIT BLOCK >

RB1002	1-234-400-21	CONDUCTOR, NETWORK (2010X4) (HC23E/HC24E/HC26/HC26E)	
RB1003	1-234-400-21	CONDUCTOR, NETWORK (2010X4) (HC23E/HC24E/HC26/HC26E)	
RB1004	1-234-375-21	RES, NETWORK	1K (1005X4)
RB1005	1-234-378-21	RES, NETWORK	10K (1005X4) (HC35E)
RB3101	1-234-380-21	RES, NETWORK	47K (1005X4)
RB3102	1-234-379-21	RES, NETWORK	22K (1005X4)
RB6001	1-234-714-11	RES, NETWORK	56 (1005X4)
RB6004	1-234-714-11	RES, NETWORK	56 (1005X4)
RB6006	1-234-378-21	RES, NETWORK	10K (1005X4)
RB6701	1-234-723-11	RES, NETWORK	75 (1005X4)
RB6702	1-234-376-11	RES, NETWORK	2.2K (1005X4)
RB6703	1-234-376-11	RES, NETWORK	2.2K (1005X4)
RB6704	1-234-381-21	RES, NETWORK	100K (1005X4)
RB8004	1-234-375-21	RES, NETWORK	1K (1005X4)
RB8006	1-234-381-21	RES, NETWORK	100K (1005X4)
RB8008	1-234-378-21	RES, NETWORK	10K (1005X4)
RB8009	1-234-375-21	RES, NETWORK	1K (1005X4)
RB8013	1-234-375-21	RES, NETWORK	1K (1005X4)
RB8604	1-234-381-21	RES, NETWORK	100K (1005X4)
RB8606	1-234-381-21	RES, NETWORK	100K (1005X4)
RB8607	1-234-378-21	RES, NETWORK	10K (1005X4)
RB8609	1-234-384-11	RES, NETWORK	1M (1005X4)
RB8610	1-234-375-21	RES, NETWORK	1K (1005X4)
RB8611	1-234-381-21	RES, NETWORK	100K (1005X4)
* RB8612	1-234-938-11	RES, NETWORK	3.3K (1005X4)
RB9001	1-234-378-21	RES, NETWORK	10K (1005X4)
RB9301	1-234-369-21	RES, NETWORK	10 (1005X4)
RB9302	1-234-380-21	RES, NETWORK	47K (1005X4)
RB9305	1-234-381-21	RES, NETWORK	100K (1005X4)

< VIBRATOR >

* X3001	1-767-203-41	VIBRATOR, CRYSTAL (36 MHz)	
X8001	1-767-994-23	VIBRATOR, CRYSTAL (32.768 kHz)	
* X8601	1-767-205-81	VIBRATOR, CRYSTAL (20 MHz)	

[Description of main button functions on toolbar of the Adobe Acrobat Reader Ver5.0 (for Windows)]



Printing a text

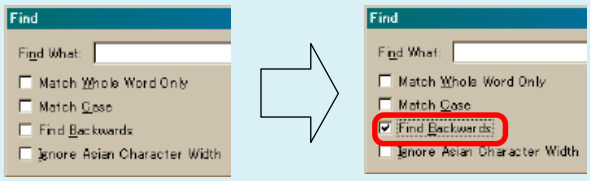
1. Click the Print button .
2. Specify a printer, print range, number of copies, and other options, and then click [OK].

Application of printing:
To set a range to be printed within a page, select the graphic selection tool and drag on the page to enclose a range to be printed, and then click the Print button.

Finding a text

1. Click the Find button .
2. Enter a character string to be found into a text box, and click the [Find]. (Specify the find options as necessary)

Application to the Service Manual:
To execute "find" from current page toward the previous pages, select the check box "Find Backward" and then click the "Find".



3. Open the find dialog box again, and click the [Find Again] and you can find the matched character strings displayed next. (Character strings entered previously are displayed as they are in the text box.)

Application to the Service Manual:
The parts on the drawing pages (block diagrams, circuit diagrams, printed circuit boards) and parts list pages in a text can be found using this find function. For example, find a Ref. No. of IC on the block diagram, and click the [Find Again] continuously, so that you can move to the Ref. No. of IC on the circuit diagram or printed circuit board diagram successively.
Note: The find function may not be applied to the Service Manual depending on the date of issue.

Switching a page

- To move to the first page, click the .
- To move to the last page, click the .
- To move to the previous page, click the .
- To move to the next page, click the .

Reversing the screens displayed once

- To reverse the previous screens (operation) one by one, click the .
- To advance the reversed screens (operation) one by one, click the .

Application to the Service Manual:
This function allows you to go and back between circuit diagram and printed circuit board diagram, and accordingly it will be convenient for the voltage check.

Moving with link

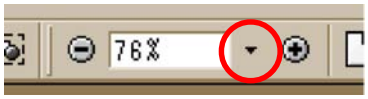
1. Select either palm tool , zoom tool , text selection tool , or graphic selection tool .
2. Place the pointer in the position in a text where the link exists (such as a button on cover and the table of contents page, or blue characters on the removal flowchart page or drawing page), and the pointer will change to the forefinger form .
3. Then, click the link. (You will go to the link destination.)

Moving with bookmark:
Click an item (text) on the bookmark pallet, and you can move to the link destination. Also, clicking can display the hidden items.
(To go back to original state, click)

Zooming or rotating the screen display

"Zoom in/out"

- Click the triangle button in the zoom control box to select the display magnification. Or, you may click or for zooming in or out.



"Rotate"

- Click rotate tool , and the page then rotates 90 degrees each.

Application to the Service Manual:
The printed circuit board diagram you see now can be changed to the same direction as the set.

Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2006.01	Official Release	—	—

DCR-HC23E/HC24E/HC26/HC26E/HC35E

RMT-830

Ver 1.0 2006.01
Revision History

SECTION 6
ADJUSTMENTS

ADJ

Link

- Before starting adjustments
  - Adjusting items when replacing main parts and boards
  - List of service tools
- CAMERA SECTION ADJUSTMENTS
  - PREPARATIONS BEFORE ADJUSTMENTS
  - INITIALIZATION OF 8, A, C, D, E, F, 1C, 1F PAGE DATA
  - CAMERA SYSTEM ADJUSTMENTS
  - ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS
  - LCD SYSTEM ADJUSTMENTS
- MECHANISM SECTION ADJUSTMENTS
  - HOW TO ENTER RECORD MODE WITHOUT CASSETE
  - HOW TO ENTER PLAYBACK MODE WITHOUT CASSETE
  - TAPE PATH ADJUSTMENT
- VIDEO SECTION ADJUSTMENTS
  - PREPARATIONS BEFORE ADJUSTMENTS
  - SYSTEM CONTROL SYSTEM ADJUSTMENTS
  - SERVO AND RF SYSTEM ADJUSTMENTS
  - VIDEO SYSTEM ADJUSTMENTS
  - AUDIO SYSTEM ADJUSTMENTS
- SERVICE MODE
  - ADJUSTMENT REMOTE COMMANDER (RM-95)
  - ADJUSTMENT REMOTE COMMANDER (NEW LANC JIG)
  - DATA PROCESS
  - SERVICE MODE

- Precaution on Replacing the VC-416 Board.

SONY

DCR-HC23E/HC24E/HC26/HC26E/HC35E_ADJ
9-876-927-51

Sony EMCS Co.

2006A0500-1

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* The camera color reproduction frame is shown on page 6-57.

SECTION 6
ADJUSTMENTS

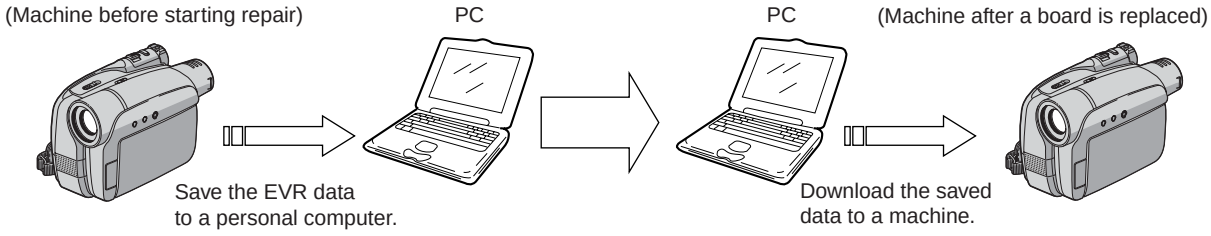
1. Before starting adjustments

EVR Data Re-writing Procedure When Replacing Board

The data that is stored in the repair board, is not necessarily correct.
Perform either procedure 1 or procedure 2 or procedure 3 when replacing board.

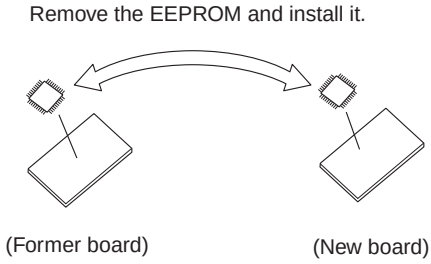
Procedure 1

Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.



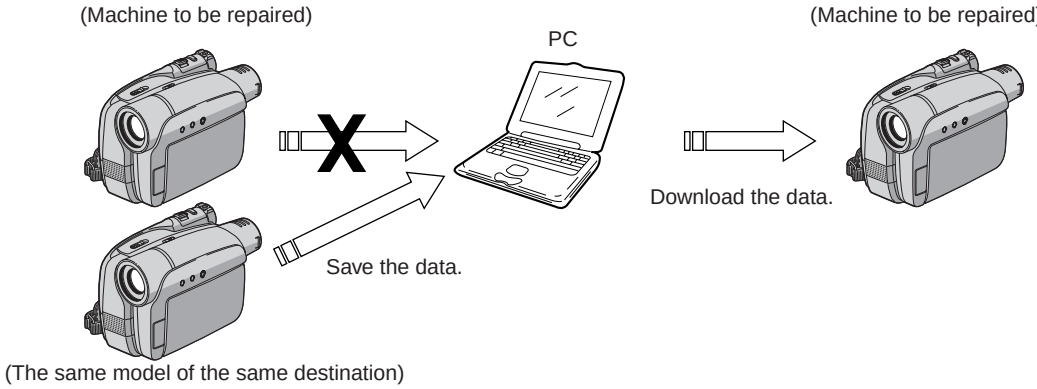
Procedure 2

Remove the EEPROM from the board of the machine that is going to be repaired. Install the removed EEPROM to the replaced board.



Procedure 3

When the data cannot be saved due to defective EEPROM, or when the EEPROM cannot be removed or installed, save the data from the same model of the same destination, and download it.



After the EVR data is saved and downloaded, check the respective items of the EVR data.
(Refer to page 6-3 for the items to be checked)

Precaution on Replacing the VC-416 Board

- Perform “Exif Model Data Check” mentioned below, and also the adjustment items necessary after VC Board replacement.

Exif Model Data Check

When you replace to the repairing board, the written data of repairing board also might be changed to original setting. When the data has changed because of board replaceing etc, check the data setting (Exif Model Data) is right. If not, rewrite to the right value.

Exif Model Data

Page	Address	Data				
		DCR-HC23E	DCR-HC24E	DCR-HC26	DCR-HC26E	DCR-HC35E
C	D2	32	32	32	32	33
C	D3	33	34	36	36	35
C	D4	45	45	00	45	45

Writing Method:

1) Select page: 0, address: 01 and set data: 01.
2) Select page: C, address: D2 to D4, and set the Exif Model Data.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE (Write) button each time to set the data.

3) Select page: 0, address: 01, and set data: 00.

1-1. Adjusting items when replacing main parts and boards

• Adjusting items when replacing main parts

When replacing main parts, adjust the items indicated by ● in the following table.

Note 1: When replacing the drum assy or the mechanism deck, reset the data of page: 7, address: A8 to AB to "00". (Refer to "Record of Use check" of "6-4. SERVICE MODE")

Adjustment Section	Adjustment	Replaced part																	
		Block replacement						Mounted part replacement											
		Lens device	LCD block LCD901 (LCD panel, Touch panel)	EVF block LCD902 (LCD panel)	Mechanism deck (Note 1)	Mechanism deck M901 (Drum assembly) (Note 1)	Mechanism deck MD block	CD-631 board IC101 (CCD imager)	LB-121 board D302 (Back light (EVF))	PD-281 board D9603-9605 (Back light (LCD))	PD-281 board Q9601, 9602 (Touch Panel I/F)	VC-416 board IC3001, X3001 (Timing generator)	VC-416 board IC3002 (S/H, AGC, A/D converter)	VC-416 board IC6001 (DV signal process)	VC-416 board IC6501 (REC/PB AMP)	VC-416 board IC6701 (Video OUT, Audio I/O)	VC-416 board IC9201 (EVR)	VC-416 board IC9301 (LCD/EVF drive)
Initialization of 8, A, C, D, E, F, 1C, 1F page data	Initialization of A, D page data																		
	Initialization of 8, C, 1C page data																		
	Initialization of E, F, 1F page data																		
Camera	36MHz origin oscillation adj.											●					●		
	HALL adj.	●																	
	Flange back adj.	●						●											
	F No. standard data input	●						●											
	Color reproduction adj.							●					●						
	Auto white balance standard data input							●					●						
	LV standard data input							●					●						
	Auto white balance adj.							●					●						
EVF	EVF automatic adj.			●					●					●					●
	White balance adj.			●					●										●
LCD	LCD automatic adj.													●					●
	V-COM adj.		●																●
	Transmissive mode white balance adj.		●							●									●
	Touch panel adj.		●								●								
Mechanism	Tape path adj.				●	●	●												
System control	Node uniqe ID No. input																		
Servo, RF	CAP FG duty adj.				●		●												
	Switching position adj.				●	●	●												
	Error rate check				●	●	●							●	●				
Video	S VIDEO OUT Y level adj.													●			●		
	S VIDEO OUT chroma level adj.													●			●		

Table 6-1-1 (1)

• **Adjusting items when replacing a board or EEPROM**

When replacing a board or EEPROM, adjust the items indicated by ● in the following table.

Note 2: When replacing the VC-416 board, perform “Exif Model Data check” after replacement.

Adjustment Section	Adjustment	Replaced part					
		CD-631 board (COMPLETE)	LB-121 board (COMPLETE)	PD-281 board (COMPLETE)	VC-416 board (COMPLETE) (Note 2)	VC-416 board IC8602 (EEP ROM)	Supporting RadarW
Initialization of 8, A, C, D, E, F, 1C, 1F page data	Initialization of A, D page data				●	●	
	Initialization of 8, C, 1C page data				●	●	
	Initialization of E, F, 1F page data				●	●	
Camera	36MHz origin oscillation adj.				●	●	
	HALL adj.				●	●	●
	Flange back adj.	●			●	●	●
	F No.standard data input	●			●	●	●
	Color reproduction adj.	●			●	●	●
	Auto white balance standard data input	●			●	●	●
	LV standard data input	●			●	●	●
	Auto white balance adj.	●			●	●	●
EVF	EVF automatic adj.		●		●	●	●
	White balance adj.		●				
LCD	LCD automatic adj.				●	●	●
	V-COM adj.				●	●	
	Transmissive mode white balance adj.				●	●	
	Touch panel adj.			●	●	●	
Mechanism	Tape path adj.						
System control	Node uniqe ID No. input				●	●	
Servo, RF	CAP FG duty adj.				●	●	●
	Switching position adj.				●	●	●
	Error rate check				●	●	●
Video	S VIDEO OUT Y level adj.				●	●	
	S VIDEO OUT chroma level adj.				●	●	

Table 6-1-1 (2)

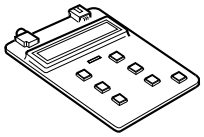
1-2. List of service tools

- Oscilloscope
- Digital voltmeter
- Audio generator
- Color monitor
- Frequency counter
- Audio attenuator
- Vectorscope
- Audio level meter
- Audio distortion meter

J-1

Adjustment remote commander (RM-95)
J-6082-053-B

J-2

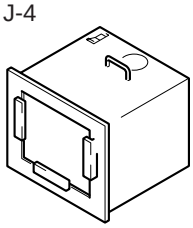


Adjustment remote commander (NEW LANC JIG)
J-6082-565-A

J-3

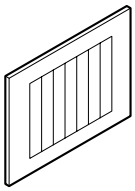
LANC cable
J-6082-442-A

J-4



Pattern box PTB-450
J-6082-200-A
or
Small pattern box
PTB-1450
J-6082-557-A

J-5

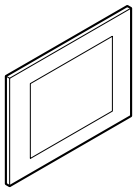


Color bar chart

For PTB-450:
J-6020-250-A

For PTB-1450:
J-6082-559-A

J-6

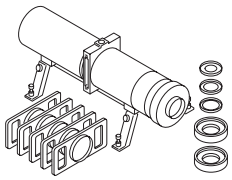


Clear chart

For PTB-450:
J-6080-621-A

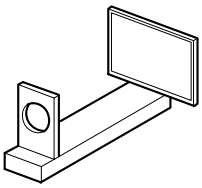
For PTB-1450:
J-6082-560-A

J-7



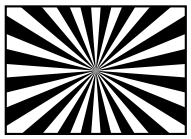
Minipattern box
J-6082-353-B

J-8



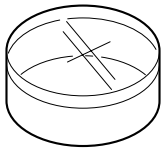
Flange back adjustment jig
J-6082-563-A

J-9



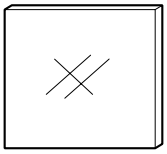
Siemens star chart
J-6080-875-A

J-10



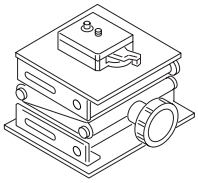
Filter for color temperature correction (C14)
J-6080-058-A

J-11



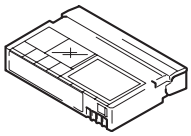
ND filter 1.0
J-6080-808-A
ND filter 0.4
J-6080-806-A
ND filter 0.1
J-6080-807-A

J-12



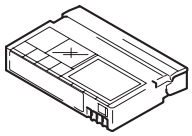
Camera table
J-6082-384-A

J-13



Tracking standard (XH2-1)
8-967-997-01

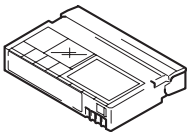
J-14



SW/OL standard (XH2-3)
8-967-997-11

J-15

Audio operation check

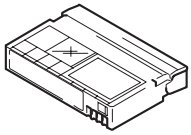


for NTSC (XH5-3)
8-967-997-51

for PAL (XH5-3P)
8-967-997-55

J-16

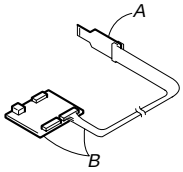
System operation check



for NTSC (XH5-5)
8-967-997-61

for PAL (XH5-5P)
8-967-997-66

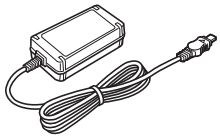
J-17



A: CPC-15
J-6082-564-A

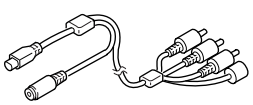
B: I/F unit for LANC control
J-6082-521-A

J-18



AC power adaptor (AC-L25A/L25B)
1-479-288-13

J-19



Multi cable for service
J-6082-535-A

Fig. 6-1-1

6-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENTS (CAMERA SECTION)

1-1-1. Preparations

Note: Before perform the adjustment, check that the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set data “00”.

1) Connect the equipment for adjustments according to Fig. 6-1-3.

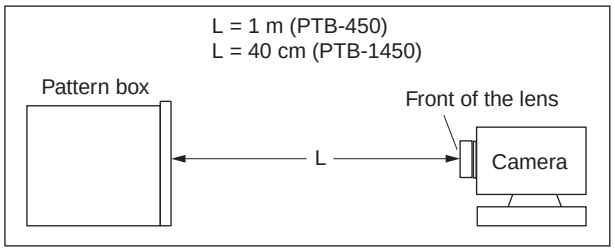


Fig. 6-1-2

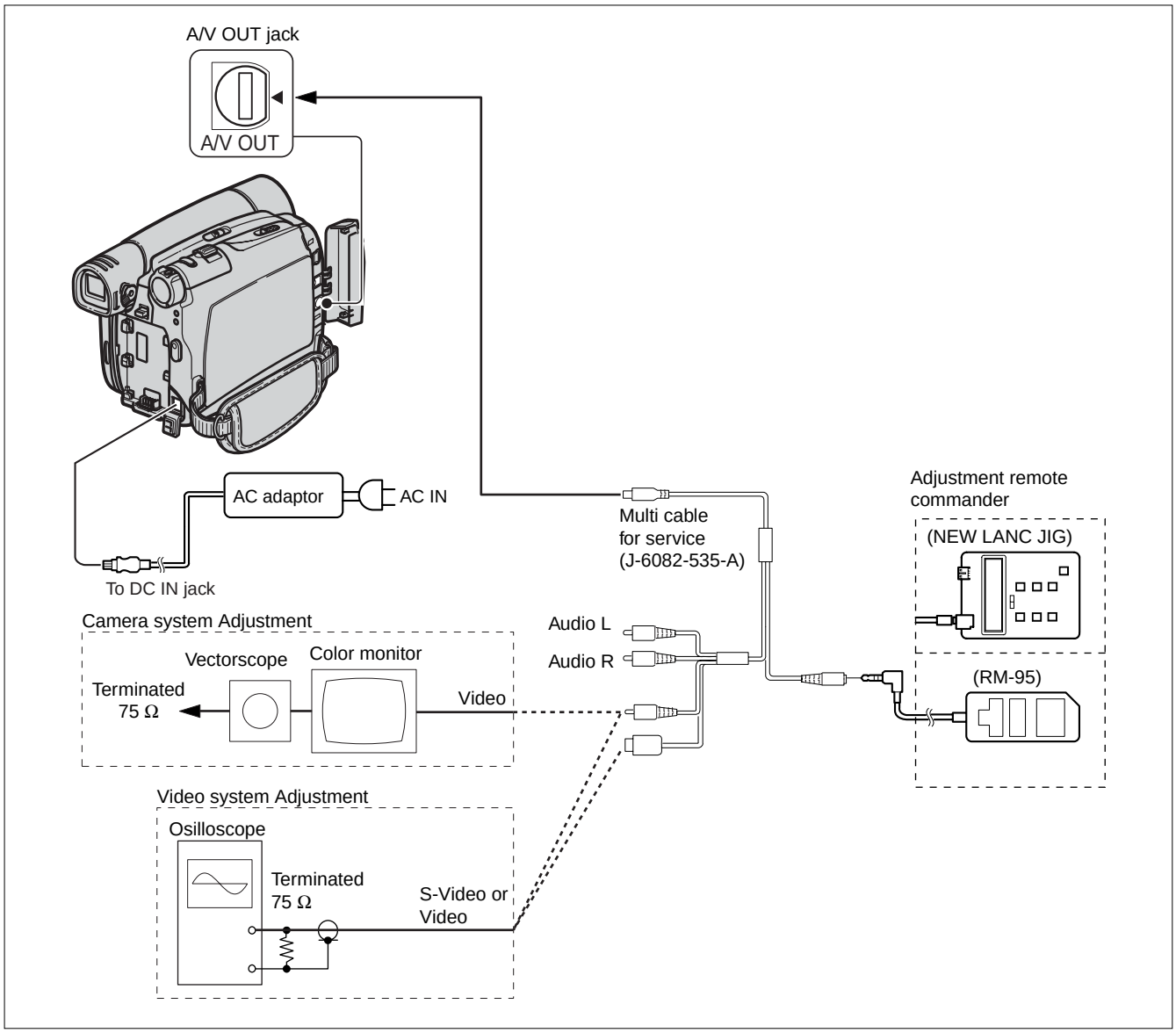


Fig. 6-1-3

1-1-2. Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

1. POWER switch (SS17000 block) ..... CAMERA
2. NIGHTSHOT PLUS switch (Lens block) ..... OFF
3. BACK LIGHT (CF17000 block) ..... OFF
4. PROGRAM AE (MENU setting) ..... AUTO
5. EXPOSURE (MENU setting) ..... AUTO
6. WHITE BAL (MENU setting) ..... AUTO
7. FOCUS (MENU setting) ..... MANUAL
8. D ZOOM (MENU setting) ..... OFF
9. WIDE SEL (MENU setting) 4:3
10. STEADY SHOT (MENU setting) ..... OFF
11. P EFFECT (MENU setting) ..... OFF
12. DEMO MODE (MENU setting) ..... OFF

2. Order of Adjustments

Basically carry out adjustments in the order given.

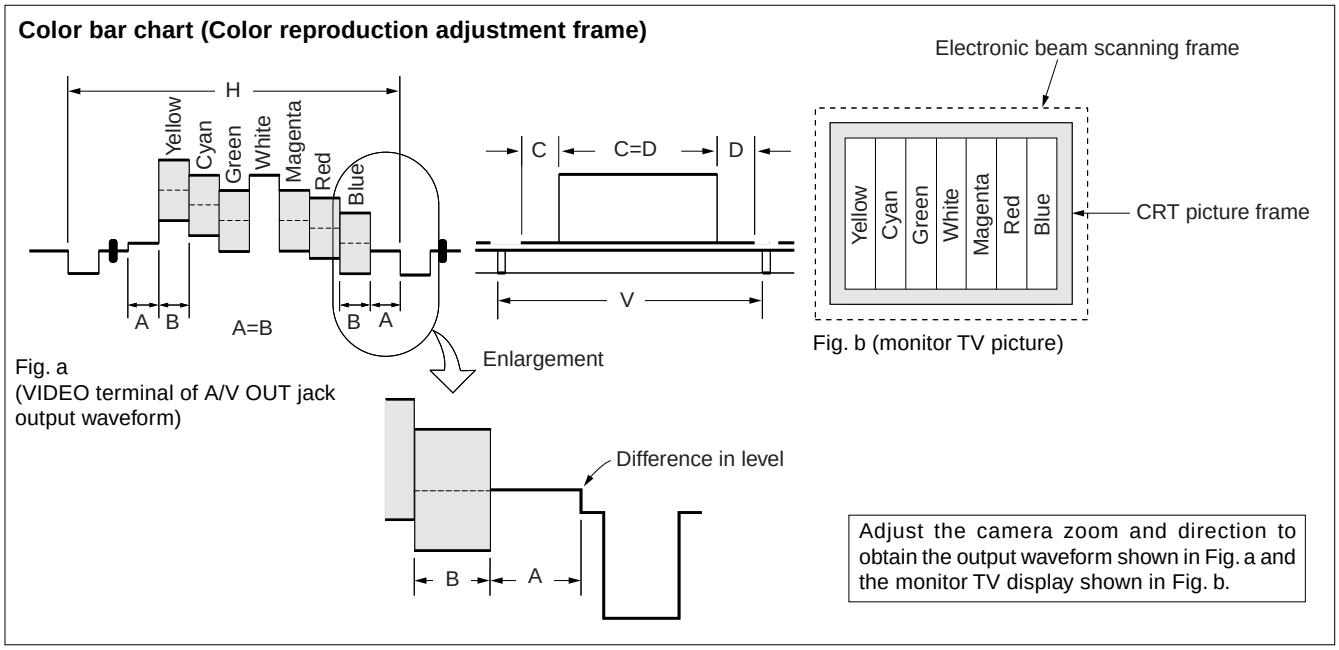


Fig. 6-1-4

3. Subjects

1) Color bar chart (Color reproduction adjustment frame)
   When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 6-1-4. (Color reproduction adjustment frame)
2) Clear chart (Color reproduction adjustment frame)
   Remove the color bar chart from pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time.)
3) Chart for flange back adjustment
   Join together a piece of white A0 size paper (1189mm × 841 mm) and a piece of black paper to make the chart shown in Fig. 6-1-5.

Note: Use a non-reflecting and non-glazing vellum paper. The size must be A0 or larger and the joint between the white and black paper must not have any undulations.

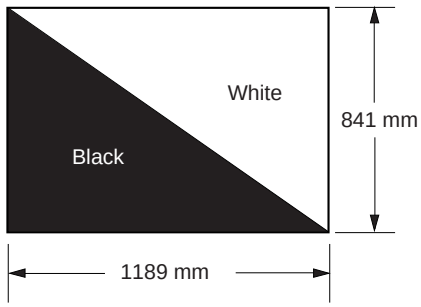


Fig. 6-1-5

4. Preparing the Flash Adjustment Box

A dark room is required to provide an accurate flash adjustment. If it is not available, prepare the flash adjustment box as given below;

1) Provide woody board A, B and C of 15 mm thickness.

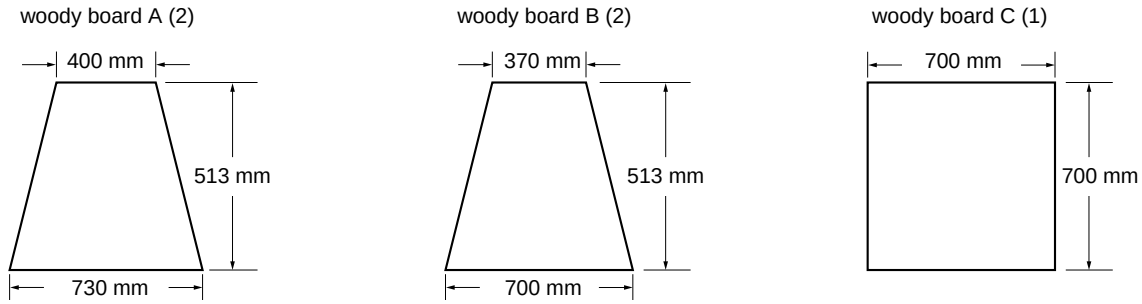


Fig. 6-1-6

2) Apply black mat paint to one side of woody board A and B.
3) Attach background paper (J-2501-130-A) to woody board C.
4) Assemble so that the black sides and the background paper side of woody board A, B and C are internal. (Fig. 6-1-7)

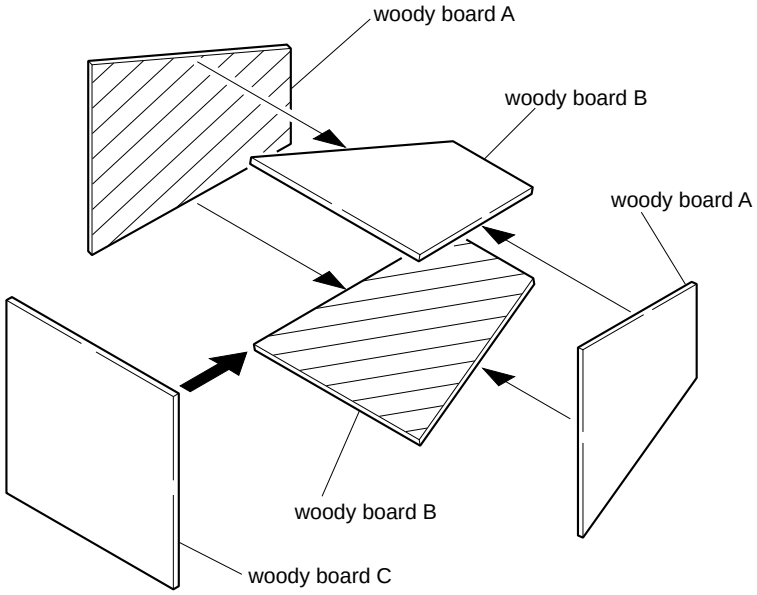


Fig. 6-1-7

1-2. INITIALIZATION OF 8, A, C, D, E, F, 1C, 1F PAGE DATA

Note 1: If reading/writing data on pages 1C, 1F, set data: 01 to page: 0, address: 10, and then select pages C, F. By this data setting, the pages 1C, 1F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

1-2-1. Initialization of A, D Page Data

Note: Check that the data of page: 0, address: 10 is "00".

1. Initializing of A, D Page Data

Note 1: If "Initialization of Pages A, D" is executed, all data on pages A, D are initialized.

Note 2: If the A, D page data has been initialized, the following adjustments need to be performed again.
1) Modification of A, D page data
2) Touch panel adjustment

Note 3: NTSC model: DCR-HC26
PAL model: DCR-HC23E/HC24E/HC26E/HC35E

Adjustment Page	A
Adjustment Address	10 to FF
Adjustment Page	D
Adjustment Address	10 to 7F

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	7	03		Set the following data. 00: NTSC model 80: PAL model
4	7	00		Set the following data. 20: Initializing A page 22: Initializing D page 28: Initializing A and D pages
5	7	01		Set the following data, and press PAUSE button. 20: Initializing A page 22: Initializing D page 28: Initializing A and D pages
6	7	02		Check the data changes to "01".
7				Perform "Modification of A, D Page Data"

2. Modification of A, D Page Data

If the A, D page data has been initialized, change the data of the"Fixed data-2" address shown in the following table by manual input.

Modifying method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note 1: If copy the data built in the different model, the camcorder may not operate.
3) When changing the data, press the PAUSE (Write) button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after completing modification A, D page data:

Order	Page	Address	Data	Procedure
1	2	00	29	
2	2	01	29	Press PAUSE (Write) button.

Note 2: If the following symptoms occur after completing of the"Modification A, D page data", check that the data of the "Fixed data-2" addresses of A, D page are same as those of the same model of the same destination.
1) The power is shut off so that unit cannot operate.

3. A Page Table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the A, D Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of A, D Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10 to 19			Fixed data-1 (Initialized data)
1A			Fixed data-2
1B to 30			Fixed data-1 (Initialized data)
31			Fixed data-2
32			
33			Fixed data-1 (Initialized data)
34			Fixed data-2
35 to 38			Fixed data-1 (Initialized data)
39			Fixed data-2
3A to 43			Fixed data-1 (Initialized data)
44			Fixed data-2
45			Fixed data-1 (Initialized data)
46			Fixed data-2
47 to 49			Fixed data-1 (Initialized data)
4A			Fixed data-2
4B, 4C			Fixed data-1 (Initialized data)
4D			Fixed data-2
4E to 52			Fixed data-1 (Initialized data)
53			Fixed data-2
54			
55			
56 to 7A			Fixed data-1 (Initialized data)
7B			Fixed data-2
7C to 7F			Fixed data-1 (Initialized data)
80			Fixed data-2
81			Fixed data-1 (Initialized data)
82	CB	CC	Touch panel adj.
83	20	1D	
84	CF	C4	
85	1C	28	
86 to 8F			Fixed data-1 (Initialized data)
90			Fixed data-2
91 to B1			Fixed data-1 (Initialized data)
B2			Fixed data-2
B3			
B4			
B5			
B6			
B7			
B8			
B9			
BA			
BB			
BC			Fixed data-2
BD			
BE			
BF			
C0			
C1			
C2 to FE			Fixed data-1 (Initialized data)
F0			Fixed data-2
F1			
F2			
F3			
F4 to FF			Fixed data-1 (Initialized data)

4. D Page Table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the A, D Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of A, D Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10	00	00	Test mode
11, 12			Fixed data-1 (Initialized data)
13			Fixed data-2
14, 15			Fixed data-1 (Initialized data)
16			Fixed data-2
17			Fixed data-1 (Initialized data)
18			Fixed data-2
19			
1A to 21			Fixed data-1 (Initialized data)
22			Fixed data-2
23			
24			
25			
26			
27 to 29			Fixed data-1 (Initialized data)
2A			Fixed data-2
2B			
2C to 36			Fixed data-1 (Initialized data)
37			Fixed data-2
38, 39			Fixed data-1 (Initialized data)
3A			Fixed data-2
3B			
3C			Fixed data-1 (Initialized data)
3D			Fixed data-2
3E to 6E			Fixed data-1 (Initialized data)
6F			Fixed data-2
70 to 7F			Fixed data-1 (Initialized data)

1-2-2. Initialization of 8, C, 1C Page Data

Note: If reading/writing data on pages 1C, set data: 01 to page: 0, address: 10, and then select pages C. By this data setting, the pages 1C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

1. Initializing of 8, C, 1C Page Data

Note 1: If "Initialization of Pages 8, C, 1C" is executed, all data on pages 8, C, 1C are initialized. (Only an individual page cannot be initialized)

Note 2: If the 8, C, 1C page data has been initialized, the following adjustments need to be performed again.
1) Modification of 8, C, 1C page data
2) Electronic viewfinder system adjustments
3) LCD system adjustments
4) Node unique ID No. input
5) Servo, RF system adjustments
6) Video system adjustments.

Adjustment Page	8
Adjustment Address	00 to FF
Adjustment Page	C
Adjustment Address	10 to FF
Adjustment Page	1C
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	3	81		Check that the data is "00".
4	3	80	0C	Press PAUSE (Write) button.
5	3	80		Check the data changes to "1C".
6				Perform "Modification of 8, C, 1C Page Data"

2. Modification of 8, C, 1C Page Data

If the 8, C, 1C page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) If modification of data on pages 8, C, set data: 00 to page: 0, address: 10, and then select pages 8, C.
3) If modification of data on pages 1C, set data: 01 to page: 0, address: 10, and then select pages C. After the modification of data finished, return the data on page: 0, address: 10 to "00".
4) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
5) When changing the data, press the PAUSE (Write) button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
6) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after completing modification 8, C, 1C page data:

Order	Page	Address	Data	Procedure
1	0	10	00	
2	2	00	29	
3	2	01	29	Press PAUSE (Write) button.

3. 8 Page Table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the 8, C, 1C Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of 8, C, 1C Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to 91	Fixed data-1 (Initialized data)		
92	Fixed data-2		
93 to 99	Fixed data-1 (Initialized data)		
9A	Fixed data-2		
9B to FF	Fixed data-1 (Initialized data)		

4. C Page Table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the 8, C, 1C Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of 8, C, 1C Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10	EE	EE	Switching position adj.
11	00	00	
12	00	00	
13	00	00	
14, 15	Fixed data-1 (Initialized data)		
16	20	20	CAP FG duty adj.
17 to 24	Fixed data-1 (Initialized data)		
25	8E	8E	S VIDEO OUT Y level adj.
26	AB	AB	S VIDEO OUT chroma level adj.
27	7A	7A	
28 to 3B	Fixed data-1 (Initialized data)		
3C	Fixed data-2		
3D, 3E	Fixed data-1 (Initialized data)		
3F	6C	6C	EVF automatic adj. (VCO adj.)
40	90	90	
41 to 44	Fixed data-1 (Initialized data)		
45	7E	7E	White balance adj. (EVF)
46	7B	7B	
47	29	29	EVF automatic adj. (Contrast adj.)
48 to 4C	Fixed data-1 (Initialized data)		
4D	Fixed data-2		
4E, 4F	Fixed data-1 (Initialized data)		
50	80	80	LCD automatic adj. (VCO adj.)
51	97	97	
52	52	52	V-COM adj. (LCD)
53, 54	Fixed data-1 (Initialized data)		
55	Fixed data-2		
56	7D	7D	Transmissive mode white balans adj. (LCD)
57	73	73	
58	61	61	LCD automatic adj. (Contrast adj.)
59	Fixed data-2		
5A to 65	Fixed data-1 (Initialized data)		
66	Fixed data-2		
67			
68 to 7A	Fixed data-1 (Initialized data)		
7B	Fixed data-2		
7C			
7D to A9	Fixed data-1 (Initialized data)		
AA	Fixed data-2		
AB	Fixed data-1 (Initialized data)		
AC	Fixed data-2		

C Page Table

Address	Initial value		Remark
	NTSC	PAL	
AD to B1			Fixed data-1 (Initialized data)
B2			Fixed data-2
B3			
B4			Fixed data-1 (Initialized data)
B5			Fixed data-2
B6 to D1			Fixed data-1 (Initialized data)
D2			Fixed data-2
D3			
D4			
D5 to DD			Fixed data-1 (Initialized data)
DE			Fixed data-2
DF			
E0	08	08	Node unique ID No. Input
E1	00	00	
E2	46	46	
E3	01	01	
E4	02	02	
E5	00	00	
E6	00	00	
E7	00	00	
E8 to F3			Fixed data-1 (Initialized data)
F4	00	00	Emergency memory address (Mechanism section)
F5	00	00	
F6	00	00	
F7	00	00	
F8	00	00	
F9	00	00	
FA	00	00	
FB	00	00	
FC	00	00	
FD	00	00	
FE	00	00	
FF	00	00	

5. 1C Page Table

Note 1: If reading/writing data on pages 1C, set data: 01 to page: 0, address: 10, and then select pages C. By this data setting, the pages 1C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, C, 1C Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, C, 1C Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to B2			Fixed data-1 (Initialized data)
B3	00	00	SD error rate check (LP)
B4	00	00	
B5	00	00	
B6	00	00	
B7	00	00	
B8	80	80	
B9	00	00	
BA	00	00	
BB	00	00	
BC	00	00	
BD	00	00	
BE	00	00	
BF	00	00	
C0	00	00	
C1	00	00	
C2	00	00	
C3	80	80	
C4	00	00	
C5	00	00	
C6	00	00	
C7	00	00	
C8	00	00	
C9 to D4			Fixed data-1 (Initialized data)
D5			Fixed data-2
D6 to F6			Fixed data-1 (Initialized data)
F7			Fixed data-2
F8 to FF			Fixed data-1 (Initialized data)

1-2-3. Initialization of E, F, 1F Page Data

Note: Check that the data of page: 0, address: 10 is “00”.

1. Initializing of E, F, 1F Page Data

Note 1: If “Initialization of Pages E, F, 1F” is executed, all data on pages E, F, 1F are initialized. (Only an individual page cannot be initialized)

Note 2: If the E, F, 1F page data has been initialized, the following adjustments need to be performed again.
1) Modification of E, F, 1F page data
2) Camera system adjustments

Note 3: NTSC model: DCR-HC26
PAL model: DCR-HC23E/HC24E/HC26E/HC35E

Adjustment Page	E
Adjustment Address	00 to FF
Adjustment Page	F
Adjustment Address	10 to FF
Adjustment Page	1F
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	6	01		Set the following data, and press PAUSE button. 2D: NTSC model 2F: PAL model
4	6	03	FF	Press PAUSE (Write) button.
5	6	02		Check the data changes to “01”.
6	6	01	00	Press PAUSE (Write) button.
7				Perform “Modification of E, F, 1F Page Data”

2. Modification of E, F, 1F Page Data

If the E, F, 1F page data has been initialized, change the data of the “Fixed data-2” address shown in the following table by manual input.

Modifying method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) If modification of data on pages E, F, set data: 00 to page: 0, address: 10, and then select pages E, F.
3) If modification of data on pages 1F, set data: 01 to page: 0, address: 10, and then select pages F. After the modification of data finished, return the data on page: 0, address: 10 to “00”.
4) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
5) When changing the data, press the PAUSE (Write) button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
6) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after completing modification E, F, 1F page data:

Order	Page	Address	Data	Procedure
1	0	10	00	
2	2	00	29	
3	2	01	29	Press PAUSE (Write) button.
4				Perform “36MHz Origin Oscillation Adjustment” of CAMERA SYSTEM ADJUSTMENTS.

3. E Page Table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the E, F, 1F Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of E, F, 1F Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to C4	Fixed data-1 (Initialized data)		
C5	Fixed data-2		
C6 to DA	Fixed data-1 (Initialized data)		
DB	Fixed data-2		
DC to FE	Fixed data-1 (Initialized data)		
FF	Fixed data-2		

4. F Page Table

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the E, F, 1F Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of E, F, 1F Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
10	80	80	36MHz origin osillation adj.
11	Fixed data-1 (Initialized data)		
12	50	50	Hall adj.
13	50	50	
14	89	89	
15	00	00	
16	17	17	
17	00	00	
18	00	00	
19	Fixed data-2		
1A	36	36	LV standard data input
1B	00	00	
1C	00	00	F No. standard data input
1D	00	00	
1E	00	00	
1F	00	00	
20	00	00	
21	00	00	
22	00	00	
23	00	00	
24 to 29	Fixed data-1 (Initialized data)		
2A	23	23	Auto white balance standard data input
2B	92	B1	
2C	08	07	
2D	04	F8	
2E	15	15	Auto white balance adj.
2F	9D	99	
30	0D	0D	
31	57	41	
32	Fixed data-1 (Initialized data)		
33	41	42	Color reproduction adj.
34	Fixed data-1 (Initialized data)		
35	2C	2A	Color reproduction adj.
36 to 39	Fixed data-1 (Initialized data)		
3A	00	00	Color reproduction adj.
3B	F0	EE	
3C, 3D	Fixed data-1 (Initialized data)		
3E	29	29	Auto white balance adj.
3F	40	40	
40	5B	5B	
41	80	80	
42, 43	Fixed data-1 (Initialized data)		

F Page Table

Address	Initial value		Remark
	NTSC	PAL	
44	3A	3A	Flange back adj.
45	74	74	
46	3F	3F	
47	2C	2C	
48	17	17	
49	4A	4A	
4A	00	00	
4B	00	00	
4C	00	00	
4D	00	00	
4E	4F	4F	
4F	19	19	
50	00	00	
51	30	30	
52	00	00	
53	04	04	
54	00	00	
55 to 8C	Fixed data-1 (Initialized data)		
8D	Fixed data-2		
8E	Fixed data-1 (Initialized data)		
8F	Fixed data-2		
90 to 96	Fixed data-1 (Initialized data)		
97	Fixed data-2		
98 to F5	Fixed data-1 (Initialized data)		
F6	Fixed data-2		
F7			
F8			
F9 to FE	Fixed data-1 (Initialized data)		
FF	Fixed data-2		

5. 1F Page Table

Note 1: If reading/writing data on pages 1F, set data: 01 to page: 0, address: 10, and then select pages F. By this data setting, the pages 1F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the E, F, 1F Page Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of E, F, 1F Page Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to 59	Fixed data-1 (Initialized data)		
5A	00	00	Emergency memory address (Camera section)
5B	00	00	
5C	00	00	
5D	00	00	
5E to 80	Fixed data-1 (Initialized data)		
81	Fixed data-2		
82 to FF	Fixed data-1 (Initialized data)		

1-3. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, check that the specified values of "VIDEO SYSTEM ADJUSTMENTS" are satisfied. (Except "36MHz Origin Oscillation Adjustment")
Check that the data of page: 0, address: 10 is "00".
If not, select page: 0, address: 10, and set the data "00".

1. 36MHz Origin Oscillation Adjustment (VC-416 board)

Set the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Subject	Not required
Measurement Point	Pin ⑯ of IC3002 on VC-416 board
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	10
Specified value	f = 18000000 ± 90 Hz

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	F	10		Change the data and set the frequency (f) to the specified value.
3	F	10		Press PAUSE (Write) button.
4	0	01	00	

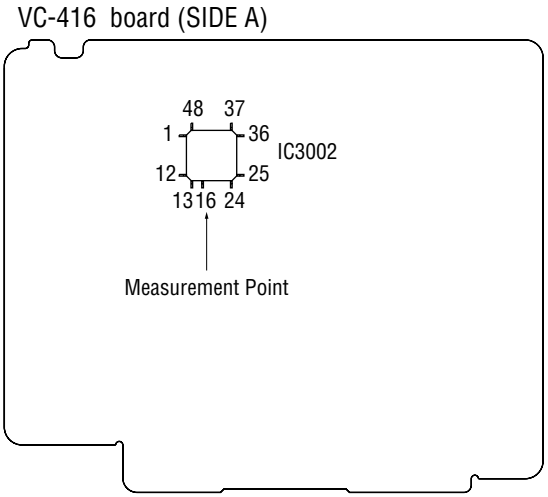


Fig. 6-1-8

2. HALL Adjustment RadarW

For detecting the position of lens iris, adjust the hall AMP gain and offset.

Subject	Not required
Measurement Point	Displayed data of page: 1 (Note 3)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	12 to 18
Specified value	Data of page: 6, address: 0C is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check that the data of page: 6, address: 02 is "00".
If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.

Switch setting:

1) POWER ..... CAMERA mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	D0	40	
3	6	01	6D	Press PAUSE (Write) button. (Note 3)
4	6	02		Check the data changes to "01".
5	6	0C		Check the data is "00".

Note 3: The adjustment data will be automatically input to page: F, address: 12 to 18.

Processing after completing adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

3. Flange Back Adjustment RadarW (Using the minipattern box or flange back adjustment jig)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Subject	Siemens star chart with ND filter for minipattern box (Note 1) or flange back adjustment jig
Measurement Point	Adjustment remote Commander
Measuring Instrument	
Adjustment Page	F
Adjustment Address	44 to 54
Specified value	Data of page: 6, address: 0C is “00”

Note 1: Dark Siemens star chart.
Note 2: Check that the data of page: 0, address: 10 is “00”.
Note 3: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.
Note 4: Perform the adjustment with the camcorder in horizontal state.
Note 5: Perform “HALL Adjustment” before this adjustment.

Switch setting:

1) POWER ..... CAMERA mode
2) NIGHTSHOT PLUS ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	01	13	Press PAUSE (Write) button.
3	6	01	27	Press PAUSE (Write) button. (Note 6)
4	6	02		Check the data changes to “01”.
5	6	0C		Check the data is “00”.

Note 6: The adjustment data will be automatically input to page: F, address: 44 to 54.

Processing after completing adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	01	25	Press PAUSE (Write) button.
3	6	02		Check the data changes to “01”.
4	6	01	00	Press PAUSE (Write) button.
5	0	01	00	
6				Perform “Flange Back Check”.

Preparations (Using the minipattern box)

1) The minipattern box is installed as shown in the following figure.
   Note 7: The attachment lenses are not used.
2) Install the minipattern box so that the distance between it and the front of lens of camcorder is less than 3 cm.
3) Make the height of minipattern box and the camera equal.
4) Check the output voltage of the regulated power supply is the specified voltage ± 0.01 Vdc.
5) Check that the center of Siemens star chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

Specified voltage: The specified voltage varies according to the minipattern box, so adjust the power supply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

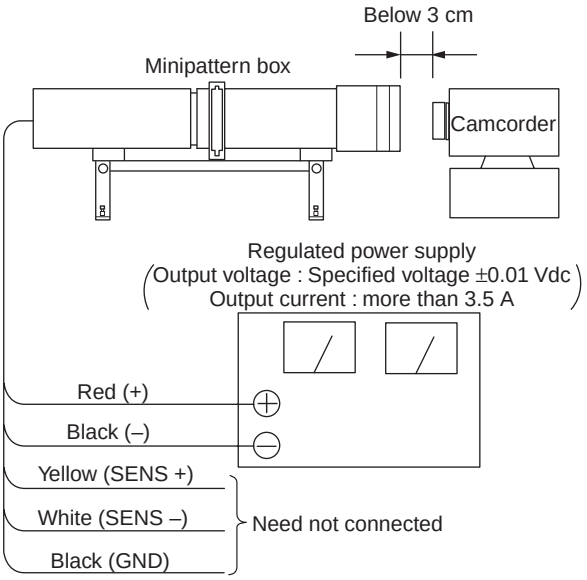


Fig. 6-1-9

Preparation (Using the flange back adjustment jig) (Luminance: about 300 lux)

1) Install the flange back adjustment jig so that the distance between it and the front of lens of camera is less than 3 cm.
2) Make the height of flange back adjustment jig and the camera equal.
3) Check that the center of chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

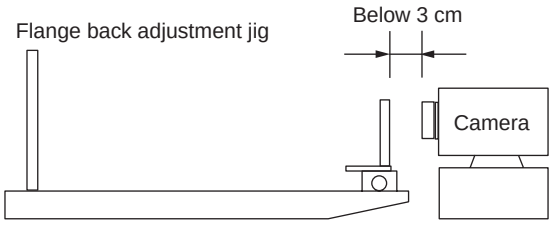


Fig. 6-1-10

4. Flange Back Adjustment (Using the flange back adjustment chart and subject more than 500 m away)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

4-1. Flange Back Adjustment (1) RadarW

Subject	Flange back adjustment chart (2.0 m from the front of lens) (Luminance: 300 to 400 lux)
Measurement Point	Adjustment remote Commander
Measuring Instrument	
Adjustment Page	F
Adjustment Address	44 to 54
Specified value	Data of page: 6, address: 0C is “00”

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.

Note 3: Perform the adjustment with the camcorder in horizontal state.

Note 4: Perform “HALL Adjustment” before this adjustment.

Switch setting:

1) POWER ..... CAMERA mode
2) NIGHTSHOT PLUS ..... OFF

Preparations before adjustments:

1) Place the Flange back adjustment chart 2.0 m from the front of the lens.
2) Check that the center of Flange back adjustment chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	01	13	Press PAUSE (Write) button.
3	6	01	15	Press PAUSE (Write) button. (Note 5)
4	6	02		Check the data changes to “01”.
5	6	0C		Check the data is “00”.

Note 5: The adjustment data will be automatically input to page: F, address: 44 to 54.

Processing after completing adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	01	25	Press PAUSE (Write) button.
3	6	02		Check the data changes to “01”.
4	6	01	00	Press PAUSE (Write) button.
5	0	01	00	
6				Perform “Flange Back Adjustment (2)”.

4-2. Flange Back Adjustment (2) RadarW

Perform this adjustment after performing "Flange Back Adjustment (1)".

Subject	Subject more than 500 m away (Subject with clear contrast such as buildings, etc.)
Measurement Point	Adjustment remote Commander
Measuring Instrument	
Adjustment Page	F
Adjustment Address	44 to 54
Specified value	Data of page: 6, address: 0C is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check that the data of page: 6, address: 02 is "00".
If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.

Switch setting:
1) POWER ..... CAMERA mode
2) NIGHTSHOT PLUS ..... OFF

Preparations before adjustments:
1) Set the zoom lens to the TELE end and expose a subject that is more than 500 m away.
(subjects with clear contrast such as building, etc.)
(Nearby subjects less than 500 m away should not be in the screen)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	01	13	Press PAUSE (Write) button.
3				Place ND filter on the lens so that the optimum image is obtain.
4	6	01	29	Press PAUSE (Write) button. (Note 3)
5	6	02		Check the data changes to "01".
6	6	0C		Check the data is "00".

Note 3: The adjustment data will be automatically input to page: F, address: 44 to 54.

Processing after completing adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	01	25	Press PAUSE (Write) button.
3	6	02		Check the data changes to "01".
4	6	01	00	Press PAUSE (Write) button.
5	0	01	00	
6				Perform "Flange Back Check".

5. Flange Back Check

Subject	Siemens star (2.0 m from the front of the lens) (Luminance: approx. 200 lux)
Measurement Point	Check operation on monitor TV
Measuring Instrument	
Specified value	Focused at the TELE end and WIDE end

Note 1: Check that the data of page: 0, address: 10 is "00".

Switch setting:
1) POWER ..... CAMERA mode
2) NIGHTSHOT PLUS ..... OFF

Note 2: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on the page: 1 of the adjusting remote commander.
1 : 00 : XX
Odd: Focused
Even: Unfocused

Checking method:

Order	Page	Address	Data	Procedure
1				Place the Siemens star 2.0 m from the front of the lens.
2				To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.
3	6	40	01	
4	6	41	01	
5				Shoot the Siemens star with the zoom TELE end.
6				Turn on the auto focus.
7	0	03	0F	
8	1			Check that the lens is focused. (Note 2)
9	6	21	10	
10				Shoot the Siemens star with the zoom WIDE end.
11				Observe the TV monitor and check that the lens is focused.

Processing after completing adjustment:

Order	Page	Address	Data	Procedure
1	6	21	00	
2	6	40	00	
3	6	41	00	
4	0	03	00	

6. Picture Frame Setting (Color reproduction adjustment frame)

Subject	Color bar chart (Color reproduction adjustment frame) (1 m (PTB-450) or 40 cm (PTB-1450) from the front of lens)
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope and monitor TV
Specified Value	A=B, C=D, E=F

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Perform "Flange Back Adjustment" before this adjustment.

Switch setting

1) POWER ..... CAMERA mode
2) NIGHTSHOT PLUS ..... OFF
3) DIGITAL ZOOM (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) FOCUS (Menu Setting) ..... MANUAL

Setting method:

Order	Procedure
1	Adjust the zoom and the camera direction, and set the specified position.
2	Mark the position of the picture frame on the monitor TV, and adjust the picture frame to the this position in following adjustment using "Color reproduction adjustment frame".

How to read the XH, XL, YH and YL data:

Order	Page	Address	Data	Procedure
1	0	03	18	
2	1			Read XH data and XL data. (Note 3)
3	0	03	22	
4	1			Read YH data and YL data. (Note 3)

Note 3: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX : XX
- XL or YL data
- XH or YH data

How to reset the zoom and focus when they deviated:

If the zoom and focus deviated due to some reason, reset them in the following method.

Order	Page	Address	Data	Procedure
1	6	90	XL	
2	6	91	XH	
3	6	92	YL	
4	6	93	YH	
5	6	01	79	Press PAUSE (Write) button.

How to release the picture frame setting:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	90	00	
3	6	91	00	
4	6	92	00	
5	6	93	00	

Check on the oscilloscope

1. Horizontal period

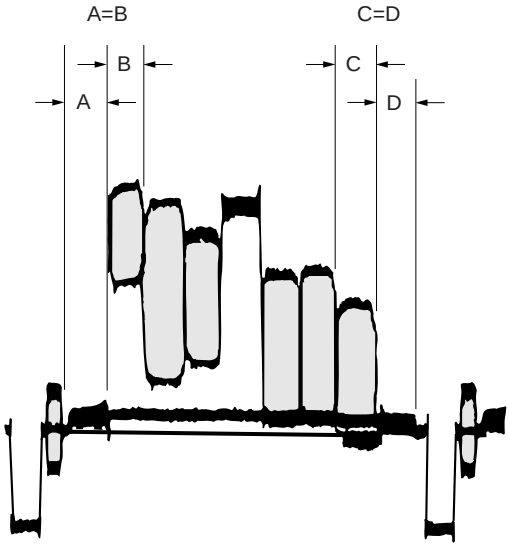


Fig. 6-1-11

2. Vertical period

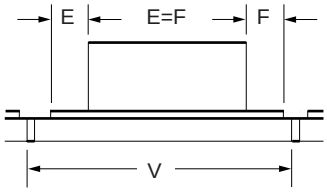


Fig. 6-1-12

Check on the monitor TV (Underscanned mode)

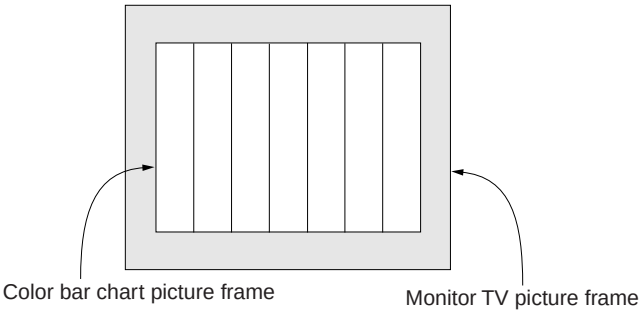


Fig. 6-1-13

7. F No. Standard Data Input RadarW

Adjust the dispersion of the lens iris every F mumber, and compensate the exposure.

Adjustment Page	F
Adjustment Address	1C to 23

Note 1: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Input the following data to page: F, address: 1C to 23.

Note 2: Press the PAUSE (Write) button of the adjustment remote commander each time to set data.

Address	Data
1C	0D
1D	0F
1E	0C
1F	03
20	FD
21	06
22	07
23	07

3) Select page: 0, address: 01, and set data: 00.

8. Color Reproduction Adjustment

Adjust the color separation matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart (Color reproduction adjustment frame)
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	33, 35, 3A, 3B
Specified Value	All color luminance points should settle within each color reproduction frame.

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Perform "Flange Back Adjustment" and "F No. Standard Data Input" before this adjustment.
Note 3: NTSC model: DCR-HC26
PAL model: DCR-HC23E/HC24E/HC26E/HC35E

Switch setting:

1) POWER ..... CAMERA mode
2) NIGHTSHOT PLUS ..... OFF
3) DIGITAL ZOOM (Menu setting) ..... OFF
4) STEADYSHOT (Menu setting) ..... OFF

Adjusting method:

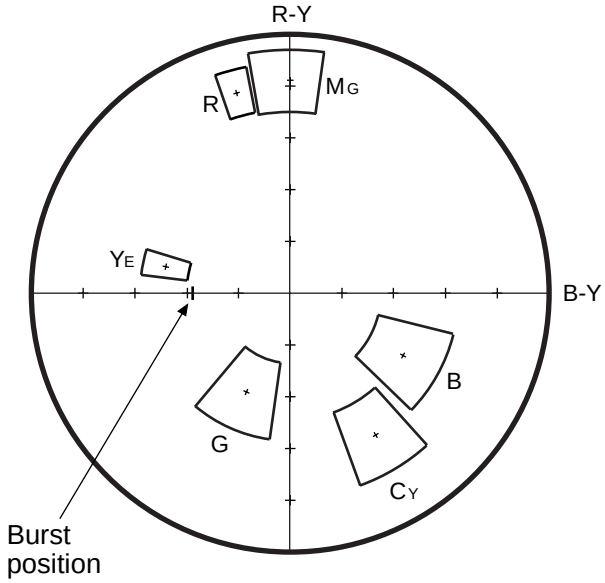
Order	Page	Address	Data	Procedure
1				Check that the picture frame is "Color Reproduction Adjustment Frame". If not, perform "6. Picture Frame Setting (Color Reproduction Adjustment Frame) "
2	0	01	01	
3	6	9D	83	
4	6	01	3D	Press PAUSE (Write) button.
5	F	80		Set the following data, and press PAUSE button. 77: NTSC model F7: PAL model
6				Adjust the GAIN and PHASE of the vectorscope, and set to the burst luminance point to the burst position of color reproduction frame.
7	F	33 35 3A 3B		Change the data and settle each color luminance point in each color reproduction frame. (Note 4)

Note 4: Be sure to press the PAUSE (Write) button of the adjusting remote commander before changing the addresses. If not, the new data will not be written to the memory.

Processing after completing adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	9D	00	
3	0	01	00	

NTSC model



PAL model

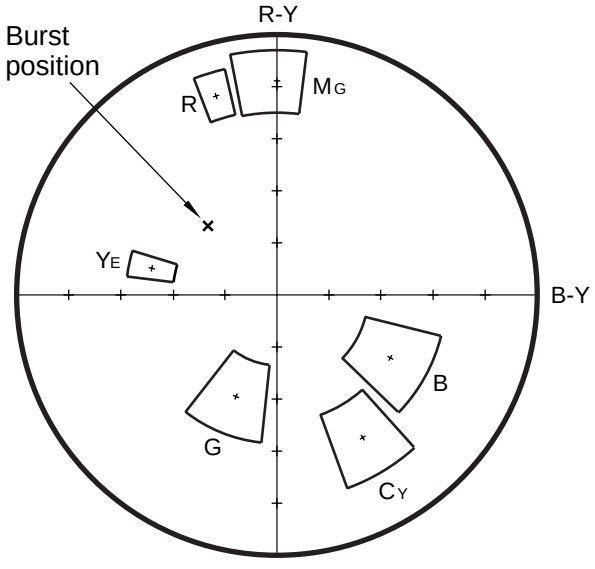


Fig. 6-1-14

9. Auto White Balance Standard Data Input RadarW

Adjust the white balance reference at 3200K.

Subject	Clear chart (Color reproduction adjustment frame)
Adjustment Page	F
Adjustment Address	2A to 2D

Note 1: Perform "Color Reproduction Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".
Note 3: Check that the data of page: 6, address: 02 is "00".
If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.

Switch setting:

1) POWER ..... CAMERA mode
2) NIGHTSHOT PLUS ..... OFF
3) DIGITAL ZOOM (Menu setting) ..... OFF
4) STEADYSHOT (Menu setting) ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that the picture frame is "Color Reproduction Adjustment Frame". If not, perform "6. Picture Frame Setting (Color Reproduction Adjustment Frame)".
2	0	01	01	
3				Wait for 2 seconds.
4	6	01	11	Press PAUSE (Write) button.
5	6	01	0B	Press PAUSE (Write) button. (Note 4)
6	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: F, address: 2A to 2D.

Processing after completing adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

10. LV Standard Data Input RadarW

Adjust the normal coefficient of the light value.

Subject	Clear chart (Color reproduction adjustment frame)
Measurement Point	Displayed data of page: 1 (Note 4)
Measuring Instrument	Adjusting remote commander
Adjustment Page	F
Adjustment Address	1A, 1B

Note 1: Perform "Flange Back Adjustment" and "F No. Standard Data Input" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".
Note 3: Check that the data of page: 6, address: 02 is "00".
If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.

Switch setting:

1) POWER ..... CAMERA mode
2) NIGHTSHOT PLUS ..... OFF
3) DIGITAL ZOOM (Menu setting) ..... OFF
4) STEADYSHOT (Menu setting) ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that the picture frame is "Color Reproduction Adjustment Frame". If not, perform "6. Picture Frame Setting (Color Reproduction Adjustment Frame)".
2	0	01	01	
3	6	01	0D	Press PAUSE (Write) button. (Note 4)
4	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: F, address: 1A and 1B.

Processing after completing adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

11. Auto White Balance Adjustment RadarW

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Adjustment Page	F
Adjustment Address	2E to 31, 3E to 41

Note 1: Perform "Auto White Balance Standard Data Input" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".
Note 3: Check that the data of page: 6, address: 02 is "00".
If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.
Note 4: NTSC model: DCR-HC26
PAL model: DCR-HC23E/HC24E/HC26E/HC35E

Switch setting:

1) POWER ..... CAMERA mode
2) NIGHTSHOT PLUS ..... OFF
3) DIGITAL ZOOM (Menu setting) ..... OFF
4) STEADYSHOT (Menu setting) ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that the picture frame is "Color Reproduction Adjustment Frame". If not, perform "6. Picture Frame Setting (Color Reproduction Adjustment Frame)".
2				Place the C14 filter on the lens.
3	0	01	01	
4	F	3E		Set the following data, and press PAUSE (Write) button. 2A: NTSC model 2A: PAL model
5	F	3F		Set the following data, and press PAUSE (Write) button. 78: NTSC model 38: PAL model
6	F	40		Set the following data, and press PAUSE (Write) button. 5A: NTSC model 5C: PAL model
7	F	41		Set the following data, and press PAUSE (Write) button. A0: NTSC model 20: PAL model
8	6	01	83	Press PAUSE (Write) button.
9	6	01	81	Press PAUSE (Write) button. (Note 5)
10	6	02		Check the data changes to "01".

Note 5: The adjustment data will be automatically input to page: F, address: 2E to 31.

Processing after completing adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	
3				Remove the C14 filter on the lens.

12. Auto White Balance Check RadarW

Subject	Clear chart (Color reproduction adjustment frame)	
Filter	ND filter 1.0, 0.4 and 0.1	
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)	Displayed data of page: 1 (Note 3)
Measuring Instrument	Vectorscope	Adjusting remote commander
Specified Value	Fig. 6-1-15 (A) and (B)	InOut data: 8000 to 8BC0

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Perform "Auto White Balance Adjustment" before this adjustment.
Note 3: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX:XX
└ Displayed data

Switch setting:

1) POWER ..... CAMERA mode
2) NIGHTSHOT PLUS ..... OFF
3) DIGITAL ZOOM (Menu setting) ..... OFF
4) STEADYSHOT (Menu setting) ..... OFF

Checking method:

Order	Page	Address	Data	Procedure
1				Check that the picture frame is "Color Reproduction Adjustment Frame". If not, perform "6. Picture Frame Setting (Color Reproduction Adjustment Frame)".
2				Check that the lens is not covered with either filter.
INDOOR check				
3	6	01	0F	Press PAUSE (Write) button.
4				Check that the center of the white luminance point within the circle shown Fig. 6-1-15 (A)
5	6	01	00	Press PAUSE (Write) button.
OUTDOOR check				
6	6	01	3F	Press PAUSE (Write) button.
7				Check that the center of the white luminance point within the circle shown Fig. 6-1-15 (B)
InOut data check				
8				Place the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.
9	6	01	00	Press PAUSE (Write) button.
10	0	03	06	
11	1			Check that the displayed data (Note 3) satisfied the InOut data specified value.

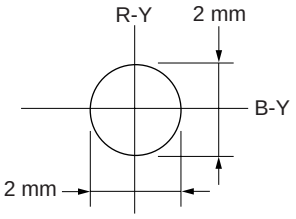


Fig. 6-1-15 (A)

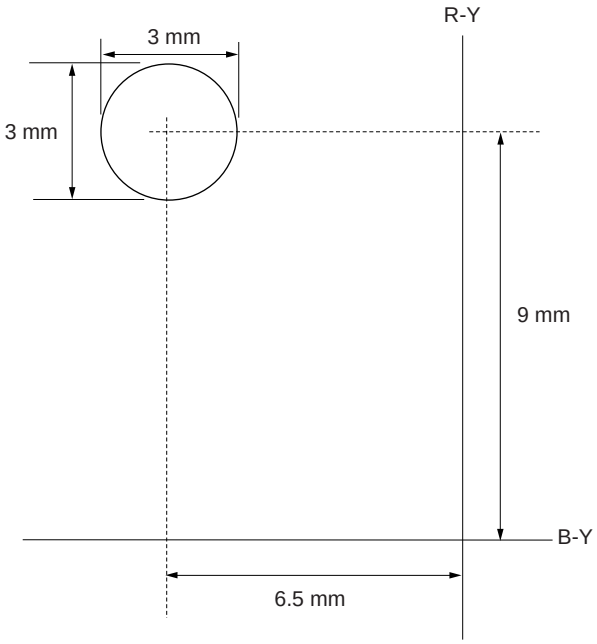


Fig. 6-1-15 (B)

Processing after completing adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	03	00	
3				Remove the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.

1-4. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

Before perform the electronic viewfinder system adjustments, check that the data of page: 0, address: 10 is "00". If not, select page: 0, address: 10, and set the data "00".

Note 1: Taken an extreme care not to destroy the liquid crystal display module by static electricity when replacing it.

Note 2: Perform the following data setting before the viewfinder system adjustments.

1) Select page: 3, address: C4, and set data: 69.
2) Select page: 3, address: C5, and set data: 02.

Reset the data after completing adjustment.

1) Select page: 3, address: C4, and set data: 00.
2) Select page: 3, address: C5, and set data: 00.

1. EVF Automatic Adjustment (VC-416 board)

RadarW

This adjustment does the following items automatically.
VCO Adjustment
Contrast Adjustment

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Adjustment Page	C
Adjustment Address	3F, 40 (VCO Adjustment) 47 (Contrast Adjustment)

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: NTSC model: DCR-HC26
PAL model: DCR-HC23E/HC24E/HC26E/HC35E

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	71	00	Press PAUSE (Write) button.
3	3	03	FF	Press PAUSE (Write) button.
4	3	01	5A	Press PAUSE (Write) button. (Note 3)
5	3	02		Check the data changes to "00".
6	3	03		Check the data is "00". (Note 4)
7	C	3F		Read the data and this data is named D_{3F}.
8				Convert D_{3F} to decimal notation, and obtain D_{3F}'. (Note 5)
9				Calculate D_{40}' using following equations. (decimal calculation) $D_{40}' = D_{3F}' + 10$ (NTSC model) $D_{40}' = D_{3F}' - 10$ (PAL model)
10				Convert D_{40}' to a hexadecimal number, and obtain D_{40}. (Note 5)
11	C	40	D_{40}	Press PAUSE (Write) button.
12	C	71	41	Press PAUSE (Write) button.
13	0	01	00	

Note 3: The adjustment data will be automatically input to page: C, address: 3F and 47.

Note 4: If the data change to "01", adjustment has error. Contents of error is written into page: 3, address: C6. See the following table.

Note 5: Refer to table 6-4-1. "Hexadecimal-decimal conversion table".

Data of page: 3, address: C6	Contents of error
5E	VCO adjustment error
61	Contrast adjustment error

2. White Balance Adjustment (VC-416 board)

Correct the white balance.
If deviated, the EVF screen color cannot be reproduced.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Check on EVF screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	45, 46
Specified Value	EVF screen must not be colored

Note 1: Check that the data of page: 0, address: 10 is “00”.

Note 2: Check the white balance only when replacing the following parts. If necessary, adjust them.

1. LCD panel
2. Light induction plate
3. IC9301

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	45	7E	Press PAUSE (Write) button.
3	C	46	7B	Press PAUSE (Write) button.
4				Check that the EVF screen is not colored. If not colored, proceed to step 6.
5	C	45 46		Change the data so that the EVF screen is not colored. (Note 3)
6	0	01	00	

Note 3: To write in the non-volatile memory (EEPROM), press the PAUSE (Write) button each time to set the data.

1-5. LCD SYSTEM ADJUSTMENTS

Before perform the LCD system adjustments, check that the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set the data “00”.

Note 1: Taken an extreme care not to destroy the liquid crystal display module by static electricity when replacing it.
Note 2: Set the “LCD BRT (LCD BRIGHT)”, “LCD COLOR” to the center with the menu settings of the touch panel.
Note 3: Open the LCD panel during the LCD system adjustment.
Note 4: NTSC model: DCR-HC26
PAL model: DCR-HC23E/HC24E/HC26E/HC35E

1. LCD Automatic Adjustment (VC-416 board)

RadarW

This adjustment does the following items automatically.
VCO Adjustment
Contrast Adjustment

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Adjustment Page	C
Adjustment Address	50, 51 (VCO Adjustment) 58 (Contrast Adjustment)

Note 1: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	70	00	Press PAUSE (Write) button.
3	3	03	FF	Press PAUSE (Write) button.
4	3	01	5A	Press PAUSE (Write) button. (Note 2)
5	3	02		Check the data changes to “00”.
6	3	03		Check the data is “00”. (Note 3)
7	C	50		Read the data and this data is named D_{50}.
8				Convert D_{50} to decimal notation, and obtain D_{50}’. (Note 4)
9				Calculate D_{51}’ using following equations. (decimal calculation) $D_{51}' = D_{50}' + 10$ (NTSC model) $D_{51}' = D_{50}' - 10$ (PAL model)
10				Convert D_{51}’ to a hexadecimal number, and obtain D_{51}. (Note 4)
11	C	51	D_{51}	Press PAUSE (Write) button.
12	C	70	41	Press PAUSE (Write) button.
13	0	01	00	

Note 2: The adjustment data will be automatically input to page: C, address: 50 and 58.
Note 3: If the data change to “01”, adjustment has error. Contents of error is written into page: 3, address: C6. See the following table.
Note 4: Refer to table 6-4-1. “Hexadecimal-decimal conversion table”.

Data of page: 3, address: C6	Contents of error
58	VCO adjustment error
60	Contrast adjustment error

2. V-COM Adjustment (VC-416 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.
If deviated, the LCD display will be move, producing flicker and conspicuous vertical lines.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	52
Specified Value	The brightness difference between the section-A and section-B is minimum

Note 1: Perform "LCD Automatic Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".

Switch setting:
LCD BACKLIGHT ..... ON

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	61	CD	Press PAUSE (Write) button.
3	C	52		Change the data so that brightness of the section A and section B is equal.
4	C	52		Subtract 5 from the data.
5	C	52		Press PAUSE (Write) button.
6	C	61	05	Press PAUSE (Write) button.
7	0	01	00	

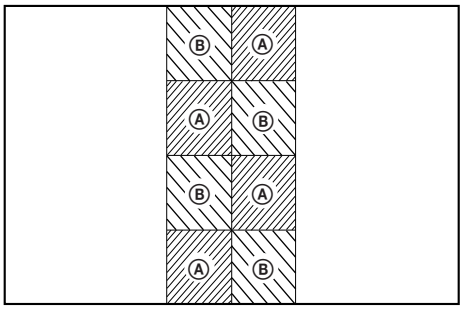


Fig. 6-1-17

3. Transmissive Mode White Balance Adjustment (VC-416 board)

Correct the white balance at transmissive mode.
If deviated, the LCD screen color cannot be reproduced.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	56, 57
Specified Value	LCD screen must not be colored

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD block
2. Light induction plate
3. IC9301

Switch setting:
LCD BACKLIGHT ..... ON

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	56	7D	Press PAUSE (Write) button.
3	C	57	73	Press PAUSE (Write) button.
4				Check that the LCD screen is not colored. If not colored, proceed to step 6.
5	C	56 57		Change the data so that the LCD screen is not colored. (Note 3)
6	0	01	00	

Note 3: To write in the non-volatile memory (EEPROM), press the PAUSE (Write) button each time to set the data.

4. Touch Panel Adjustment

Adjust the calibration of touch panel.

Mode	VTR stop (PLAY/EDIT mode)
Signal	Arbitrary
Adjustment Page	A
Adjustment Address	82 to 85

Note 1: This adjustment should be carried out upon completetion of "1. LCD Automatic Adjustment".
Note 2: Check that the data of page: 0, address: 10 is "00".
Note 3: Check that the LCD panel is not reverse mode.
Note 4: Adjustment must be performed while observing the LCD screen from the front.

Preparation:

Order	Page	Address	Data	Procedure
1	7	05	01	
2				Check that the touch panel adjustment screen is displayed.
3				Perform "Adjusting method".

Adjusting method:

1) Using a ball-point pen etc., push the center of "×" indicated in the part A.
2) Using a ball-point pen etc., push the center of "×" indicated in the part B.
3) Using a ball-point pen etc., push the center of "×" indicated in the part C.

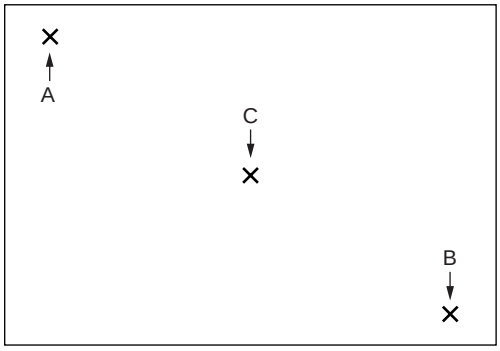


Fig. 6-1-18

Processing after completing adjustment:

Order	Page	Address	Data	Procedure
1	7	05		Check the data changes to "00".

6-2. MECHANISM SECTION ADJUSTMENTS

On the mechanism section adjustment

For details of mechanism section adjustments, checks, and replacement of mechanism parts, refer to the separate volume "DV MECHANICAL ADJUSTMENT MANUAL IX N Mechanism ".

Note 1: Before performing the adjustments, check the data of page: 0, address: 10 is "00". If not, set data: 00 to this address.

2-1. HOW TO ENTER RECORD MODE WITHOUT CASSETTE

1) Connect the multi cable for service (J-6082-535-A) to the A/V OUT jack.
2) Connect the adjustment remote commander to the LANC socket of multi cable for service. Set the HOLD switch to ON. (Set the slide switch to SERVICE)
3) Close the cassette compartment without the cassette.
4) Select page: 3, address: 01, set data: 0C, and press the PAUSE (Write) button of the adjustment remote commander. (The mechanism enters the record mode automatically.)
   Note: The function buttons become inoperable.
5) To quit the record mode, select page: 3, address: 01, set data: 00, and press the PAUSE (Write) button of the adjustment remote commander. (Whenever you want to quit the record mode, be sure to quit following this procedure.)

2-2. HOW TO ENTER PLAYBACK MODE WITHOUT CASSETTE

1) Connect the multi cable for service (J-6082-535-A) to the A/V OUT jack.
2) Connect the adjustment remote commander to the LANC socket of multi cable for service. Set the HOLD switch to ON. (Set the slide switch to SERVICE)
3) Close the cassette compartment without the cassette.
4) Select page: 3, address: 01, set data: 0B, and press the PAUSE (Write) button of the adjustment remote commander. (The mechanism enters the playback mode automatically.)
   Note: The function buttons become inoperable.
5) To quit the playback mode, select page: 3, address: 01, set data: 00, and press the PAUSE (Write) button of the adjustment remote commander. (Whenever you want to quit the playback mode, be sure to quit following this procedure.)

2-3. TAPE PATH ADJUSTMENT

1. Preparation for Adjustment

1) Clean the tape running side (tape guide, drum, capstan shaft, pinch roller, etc.).
2) Connect the multi cable for service (J-6082-535-A) to the A/V OUT jack.
3) Connect the adjustment remote commander to the LANC socket of multi cable for service. Set the HOLD switch to ON. (Set the slide switch to SERVICE)
4) Connect an oscilloscope to CN1014 of VC-416 board via CPC-15 (J-6082-564-A) and I/F unit for LANC control (J-6082-521-A).
   Channel 1: VC-416 board, CN1014 Pin ① (Note)
   External trigger: VC-416 board, CN1014 Pin ②
   Note: Connect a 75 Ω resistor between pins ① of CN1014 and ③ (GND).
   75 Ω resistor (Parts code: 1-247-804-11)
5) Playback the alignment tape for tracking. (XH2-1)
6) Select page: 3, address: 33, and set data: 08.
7) Select page: 3, address: 26, set data: 31, and press the PAUSE (Write) button.
8) Check that the oscilloscope RF waveform is normal at the entrance and exit.
   If not normal, adjust according to the separate volume "DV MECHANICAL ADJUSTMENT MANUAL IX N Mechanism" .

CN1014 of VC-416 board

Pin No.	Signal Name
1	RF_MON
2	SWP
3	GND
4	XCS EEP
5	EEP SCK
6	EEP SO
7	EEP SI
8	GND

2. Procedure after operations

1) Connect the adjustment remote commander to the LANC socket of multi cable for service. Set the HOLD switch to ON. (Set the slide switch to SERVICE)
2) Select page: 3, address: 26, set data: 00, and press the PAUSE (Write) button.
3) Select page: 3, address: 33, and set data: 00.

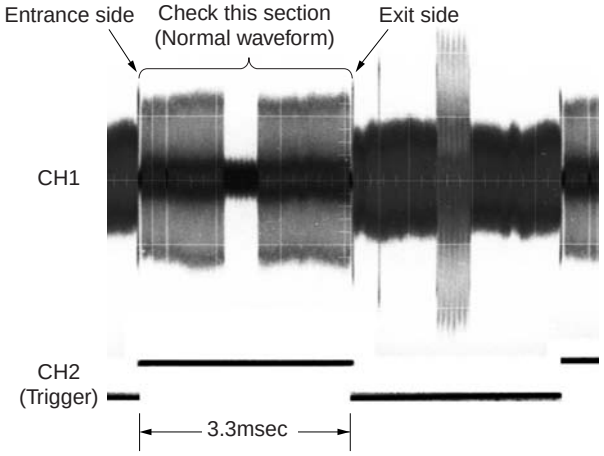


Fig. 6-2-1

6-3. VIDEO SECTION ADJUSTMENTS

3-1. PREPARATIONS BEFORE ADJUSTMENTS

Use the following measuring instruments for video section adjustments.

3-1-1. Precautions on Adjusting

Note: Before performing the adjustment, check the data of page: 0, address: 10 is "00". If not, select page: 0, address: 00, and set data "00".

1) The adjustments of this unit are performed in the VTR mode (PLAY/EDIT mode) or camera mode (CAMERA mode).

3-1-2. Adjusting Connectors

The measuring point of the playback RF signal is CN1014 of VC-416 board. Connect the measuring instruments via the CPC-15 jig (J-6082-564-A) and I/F unit for LANC control (J-6082-521-A). Refer to "MECHANISM SECTION ADJUSTMENT" for the measuring method. The following table lists the pin numbers and signal names of CN1014.

Pin No.	Signal Name
1	RF_MON
2	SWP
3	GND
4	XCS EEP
5	EEP SCK
6	EEP SO
7	EEP SI
8	GND

Table 6-3-1

3-1-3. Connecting the Equipment

Connect the measuring instruments as shown in Fig. 6-3-1, and perform the adjustments.

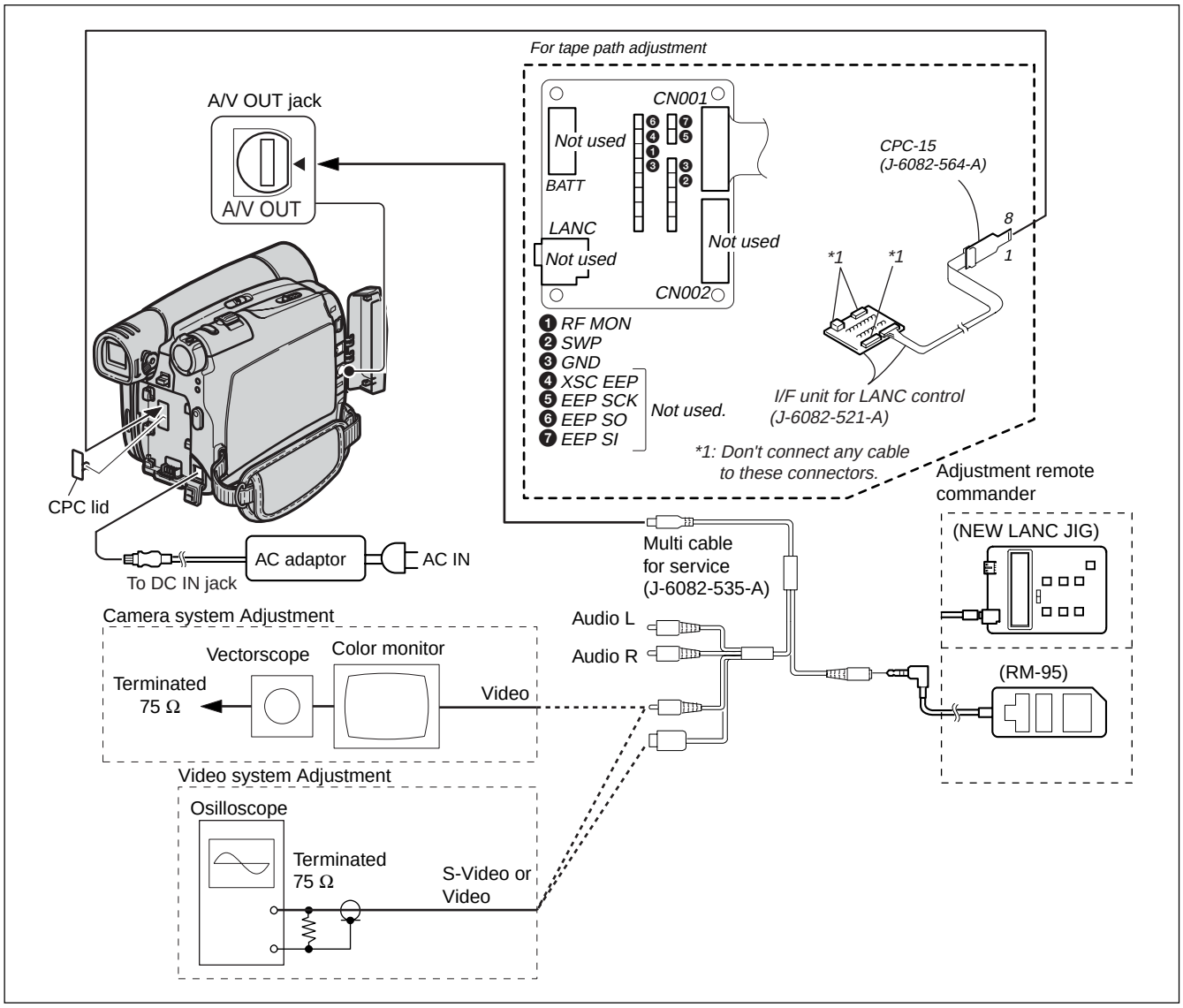


Fig. 6-3-1

3-1-4. Alignment Tapes

Use the alignment tapes shown in the following table.
Use tapes specified in the signal column of each adjustment.

Name	Use
Tracking standard (XH2-1)	Tape path adjustment
SW/OL standard (XH2-3)	Switching position adjustment
Audio operation check (XH5-3(NTSC), XH5-3P(PAL))	Audio system adjustment
System operation check (XH5-5(NTSC), XH5-5P(PAL))	Operation check

Fig. 6-3-2 shows the 75% color bar signals recorded on the alignment tape for Audio Operation Check.

Note: Measure with video terminal (Terminated at 75 Ω)

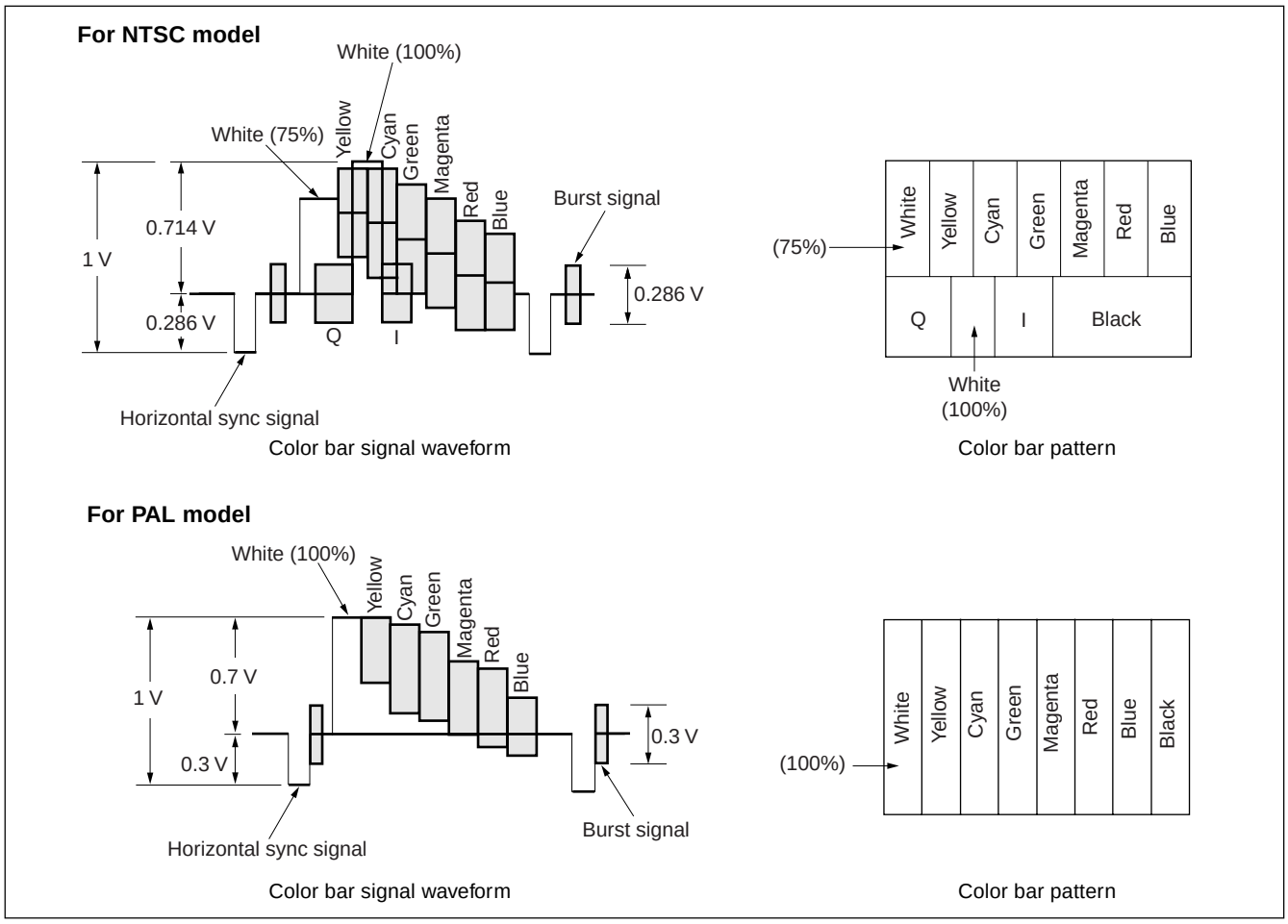


Fig. 6-3-2. Color bar signal of alignment tapes

3-1-5. Output Level and Impedance

Video output
A/V OUT jack
Video signal: 1 Vp-p, 75 Ω unbalanced, sync negative

S video output
A/V OUT jack
Luminance signal: 1 Vp-p, 75 Ω unbalanced, sync negative
Chrominance signal: 0.286 Vp-p, 75Ω unbalanced (NTSC)
: 0.300 Vp-p, 75Ω unbalanced (PAL)

Audio output
A/V OUT jack
Input impedance: More than 47 kΩ
Output level: 327mV (at load impedance 47 kΩ)
Output impedance: Below 2.2 kΩ

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Initialization of 8, A, C, D, E, F, 1C, 1F Page Data

If the 8, A, C, D, E, F, 1C, 1F page data is erased due to some reason, perform "1-2. INITIALIZATION OF 8, A, C, D, E, F, 1C, 1F PAGE DATA ", of "6-1. CAMERA SECTION ADJUSTMENT"

2. Node Unique ID No. Input

Note 1: Perform "2-2. Input of Serial No." if the data on page C has been cleared and Original node unique ID No. is uncertain.
Usually, read the data on page C before repair, and write it after repair.

Note 2: Check that the data of page: 0, address: 10 is "00".

2-1. Input of Company ID

Write the company ID to the EEPROM (nonvolatile memory).

Page	C
Address	E0, E1, E2, E3, E4

Input method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: C, and enter the following data.

Note 3: Each time the data is set, press the PAUSE (Write) button on the adjusting remote commander.

Address	Data
E0	08
E1	00
E2	46
E3	01
E4	02

3) Select page: 0, address: 01, and set data: 00.

2-2. Input of Serial No.

Write the serial No. and model code to the EEPROM (nonvolatile memory).
In writing the serial No., a decimal number should be converted into a hexadecimal number.

Page	C
Address	E5, E6, E7

1) Select page: 0, address: 01, and set data: 01.
2) Read the serial No. from the model name label, and it is assumed to be D_1.
   Example: If serial No. is "77881",
   $D_1 = 77881$
3) From Table 6-3-2, obtain D_2 and H_1 that correspond to D_1.
   Example: If $D_1 = 77881$,
   $D_2 = D_1 - 65536 = 12345$
   $H_1 = FE$

D_1 (decimal)	D_2 (decimal)	H_1 (hexadecimal) (Service model code)
00001 to 65535	D_1	FE
65536 to 131071	$D_1 - 65536$	FE
131072 to196607	$D_1 - 131072$	FE
196608 to 262143	$D_1 - 196608$	FE
262144 to 327679	$D_1 - 262144$	FE
327680 to 393215	$D_1 - 327680$	FE
393216 to 458751	$D_1 - 393216$	FE
458752 to 524287	$D_1 - 458752$	FE
524288 to 589823	$D_1 - 524288$	FE
589824 to 655359	$D_1 - 589824$	FE
655360 to 720895	$D_1 - 655360$	FE
720896 to 786431	$D_1 - 720896$	FE
786432 to 851967	$D_1 - 786432$	FE
851968 to 917503	$D_1 - 851968$	FE
917504 to 983039	$D_1 - 917504$	FE
983040 to 999999	$D_1 - 983040$	FE

Table 6-3-2

4) Enter H_1 to address: E5 on page: C.
   Example: If $H_1 = FE$,
   select page: C, address: E5, and set data: FE, then press the PAUSE (Write) button.
5) From Table 6-3-3, obtain the maximum decimal number less than D_2, and it is assumed to be D_3.
   Example: If $D_2 = 12345$.
   $D_3 = 12288$
6) From Table 6-3-3, obtain a hexadecimal number that corresponds to D_3, and it is assumed to be H_3.
   Example: If $D_3 = 12288$,
   $H_3 = 3000$
7) Caluculate D_4 using following equations (decimal caluculation). ($0 \leqq D_4 \leqq 225$)
   $D_4 = D_2 - D_3$
   Example: If $D_2 = 12345$ and $D_3 = 12288$,
   $D_4 = 12345 - 12288 = 57$
8) Convert D_4 into a hexadecimal number to obtain H_4. (See Table 6-4-1 "Hexadecimal - decimal conversion table" in 6-4. Service Mode)
   Example: If $D_4 = 57$,
   $H_4 = 39$
9) Enter higher two digits of H_3 to address: E6 on page: C.
   Example: If $H_3 = 3000$,
   select page: C, address: E6, and set data: 30, then press the PAUSE (Write) button.
10) Enter H_4 to address: E7 on page: C.
    Example: If $H_4 = 39$,
    select page: C, address: E7, and set data: 39, then press the PAUSE (Write) button.
11) Select page: 0, address: 01, and set data: 00.

D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3
0	0000	8192	2000	16384	4000	24576	6000	32768	8000	40960	A000	49152	C000	57344	E000
256	0100	8448	2100	16640	4100	24832	6100	33024	8100	41216	A100	49408	C100	57600	E100
512	0200	8704	2200	16896	4200	25088	6200	33280	8200	41472	A200	49664	C200	57856	E200
768	0300	8960	2300	17152	4300	25344	6300	33536	8300	41728	A300	49920	C300	58112	E300
1024	0400	9216	2400	17408	4400	25600	6400	33792	8400	41984	A400	50176	C400	58368	E400
1280	0500	9472	2500	17664	4500	25856	6500	34048	8500	42240	A500	50432	C500	58624	E500
1536	0600	9728	2600	17920	4600	26112	6600	34304	8600	42496	A600	50688	C600	58880	E600
1792	0700	9984	2700	18176	4700	26368	6700	34560	8700	42752	A700	50944	C700	59136	E700
2048	0800	10240	2800	18432	4800	26624	6800	34816	8800	43008	A800	51200	C800	59392	E800
2304	0900	10496	2900	18688	4900	26880	6900	35072	8900	43264	A900	51456	C900	59648	E900
2560	0A00	10752	2A00	18944	4A00	27136	6A00	35328	8A00	43520	AA00	51712	CA00	59904	EA00
2816	0B00	11008	2B00	19200	4B00	27392	6B00	35584	8B00	43776	AB00	51968	CB00	60160	EB00
3072	0C00	11264	2C00	19456	4C00	27648	6C00	35840	8C00	44032	AC00	52224	CC00	60416	EC00
3328	0D00	11520	2D00	19712	4D00	27904	6D00	36096	8D00	44288	AD00	52480	CD00	60672	ED00
3584	0E00	11776	2E00	19968	4E00	28160	6E00	36352	8E00	44544	AE00	52736	CE00	60928	EE00
3840	0F00	12032	2F00	20224	4F00	28416	6F00	36608	8F00	44800	AF00	52992	CF00	61184	EF00
4096	1000	12288	3000	20480	5000	28672	7000	36864	9000	45056	B000	53248	D000	61440	F000
4352	1100	12544	3100	20736	5100	28928	7100	37120	9100	45312	B100	53504	D100	61696	F100
4608	1200	12800	3200	20992	5200	29184	7200	37376	9200	45568	B200	53760	D200	61952	F200
4864	1300	13056	3300	21248	5300	29440	7300	37632	9300	45824	B300	54016	D300	62208	F300
5120	1400	13312	3400	21504	5400	29696	7400	37888	9400	46080	B400	54272	D400	62464	F400
5376	1500	13568	3500	21760	5500	29952	7500	38144	9500	46336	B500	54528	D500	62720	F500
5632	1600	13824	3600	22016	5600	30208	7600	38400	9600	46592	B600	54784	D600	62976	F600
5888	1700	14080	3700	22272	5700	30464	7700	38656	9700	46848	B700	55040	D700	63232	F700
6144	1800	14336	3800	22528	5800	30720	7800	38912	9800	47104	B800	55296	D800	63488	F800
6400	1900	14592	3900	22784	5900	30976	7900	39168	9900	47360	B900	55552	D900	63744	F900
6656	1A00	14848	3A00	23040	5A00	31232	7A00	39424	9A00	47616	BA00	55808	DA00	64000	FA00
6912	1B00	15104	3B00	23296	5B00	31488	7B00	39680	9B00	47872	BB00	56064	DB00	64256	FB00
7168	1C00	15360	3C00	23552	5C00	31744	7C00	39936	9C00	48128	BC00	56320	DC00	64512	FC00
7424	1D00	15616	3D00	23808	5D00	32000	7D00	40192	9D00	48384	BD00	56576	DD00	64768	FD00
7680	1E00	15872	3E00	24064	5E00	32256	7E00	40448	9E00	48640	BE00	56832	DE00	65024	FE00
7936	1F00	16128	3F00	24320	5F00	32512	7F00	40704	9F00	48896	BF00	57088	DF00	65280	FF00

Note: D_3: Decimal
H_3: Hexadecimal

Table 6-3-3

3-3. SERVO AND RF SYSTEM ADJUSTMENTS

Before perform the servo and RF system adjustments, check that the specified values of "36MHz Origin Oscillation Adjustment" of "1-3. CAMERA SYSTEM ADJUSTMENTS" is satisfied.
Check that the data of page: 0, address: 10 is "00". If not, select page: 0, address: 10, and set the data "00".

Adjusting Procedure:

1. CAP FG duty adjustment
2. Switching position adjustment
3. Error rate check

1. CAP FG Duty Adjustment (VC-416 board)

RadarW

Set the CAP FG signal duty cycle to 50% to establish an appropriate capstan servo. If deviated, the uneven rotation of capstan and noise can occur in the LP mode.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	16
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2	0	01	01	
3	C	16	20	Press PAUSE (Write) button.
4	3	03	FF	Press PAUSE (Write) button.
5	3	01	1B	Press PAUSE (Write) button.
6	3	02		Check the data changes in the following order "1B" → "2B" → "00"
7	3	03		Check the data is "00". (Note 2)
8	0	01	00	

Note 2: If the data is "01" or "11", adjustment has errors or the mechanism deck is defective.
Also, if the data is "80", the mechanism deck is in emergency state or the tape reached its end.

2. Switching Position Adjustment (VC-416 board)

RadarW

Mode	VTR playback (PLAY/EDIT mode)
Signal	SW/OL standard (XH2-3)
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	10, 11, 12, 13
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1				Insert the SW/OL standard tape and enter the VTR stop mode.
2	0	01	01	
3	C	10	EE	Press PAUSE (Write) button.
4	3	21		Check the data is "02". (Note 2)
5	3	03	FF	Press PAUSE (Write) button.
6	3	01	0D	Press PAUSE (Write) button.
7	3	02		Check the data changes to "00".
8	3	03		Check the data is "00". (Note 3)
9	0	01	00	

Note 2: If the data is "72", the tape top being played. After playing the tape for 1 to 2 seconds, stop it, perform step 5 and higher.
If the data is "62", the tape end being played. After rewind the tape, perform step 5 and higher.

Note 3: If bit0 of the data is "1", the EVEN channel is defective.
If bit1 of the data is "1", the ODD channel is defective.
Contents of the defect is see written into page: C, address: 10 and 12. See following table.
(For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".)
If bit3 of the data is "1", the tape end being played, so rewind the tape and perform the adjustment again.

When the EVEN channel is defective

Data of page: C, address: 10	Contents of defect
EE	Writing into EEPROM (IC8602) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC6001

When the ODD channel is defective

Data of page: C, address: 12	Contents of defect
EE	Writing into EEPROM (IC8602) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC6001

3. Error Rate Check (VC-416 board)

RadarW

Note: Check that the data of page: 0, address: 10 is “00”.

3-1. Preparations before adjustments

Mode	Camera recording (CAMERA mode)
Subject	Arbitrary

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	01	
3	C	0D	C8	Press PAUSE (Write) button.
4	0	10	00	
5				Record the camera signal for 2 minutes.

3-2. Error Rate Check

Mode	VTR playback (PLAY/EDIT mode)
Subject	Recorded signal at “Preparations before adjustments”
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	1C (Note 1)
Adjustment Address	B3 to C8
Specified value	The data of page: 3, address: 03 is “00”

Note 1: If reading/writing data on pages 1C, set data: 01 to page: 0, address: 10, and then select pages: C. By this data setting, the pages 1C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Initial Value of Page 1C: Address: B3 to C8

Address	Initial value	Address	Initial value	Address	Initial value
B3	00	BB	00	C3	80
B4	00	BC	00	C4	00
B5	00	BD	00	C5	00
B6	00	BE	00	C6	00
B7	00	BF	00	C7	00
B8	80	C0	00	C8	00
B9	00	C1	00		
BA	00	C2	00		

Table 6-3-4

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2				Check that the data of page: 1C, address: B3 to C8 is the initial value. (See Table 6-3-4)
3				Playback the recorded signal at “Preparations before adjustments”.
4	3	03	FF	Press PAUSE (Write) button.
5	3	01	40	Press PAUSE (Write) button.
6	3	02		Check the data changes to “00”.
7	3	03		Check the data is “00”. (Note 2)
8				Perform “Processing after Completing Adjustments”.

Note 2: If the data is other than “00”, Error rate is abnormal. For the contents of the abnormality, see the following table.

Data of page: 3, address: 03	Contents of defect
01	EVEN channel is abnormal.
02	ODD channel is abnormal.
03	EVEN channel and ODD channel are abnormal.

Note 3: If Error rate is abnormal, Check the use tape, clean the tape running surface. And after inputting initial values to page 1C: address: B3 to C8, perform re-adjustment. (See Table 6-3-4)

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	01	
3	C	0D	00	Press PAUSE (Write) button.
4	0	10	00	
5	0	01	00	

3-4. VIDEO SYSTEM ADJUSTMENTS

Before perform the video system adjustments, check that the specified values of “36 MHz Origin Oscillation Adjustment” of “1-3. CAMERA SYSTEM ADJUSTMENTS” is satisfied.
Check that the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set the data “00”.

Adjusting Procedure:

1. S VIDEO OUT Y level adjustment
2. S VIDEO OUT chroma level adjustment
3. VIDEO OUT level check

1. S VIDEO OUT Y Level Adjustment (VC-416 board)

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Y signal terminal of S VIDEO plug of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	25
Specified value	A = 1000 ± 14 mVp-p

Note 1: Check that the data of page: 0, address: 10 is “00”.

Switch setting:

1) DEMO MODE (Menu setting) ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	8	A0		Set the bit value of bit3 is “1”, and press PAUSE (Write) button. (Note 2)
3	3	0C	02	Press PAUSE (Write) button.
4	C	25		Change the data and set the Y signal level (A) to the specified value.
5	C	25		Press PAUSE (Write) button.
6	3	0C	00	Press PAUSE (Write) button.
7	8	A0		Set the bit value of bit3 is “0”, and press PAUSE (Write) button. (Note 2)
8	0	01	00	

Note 2: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

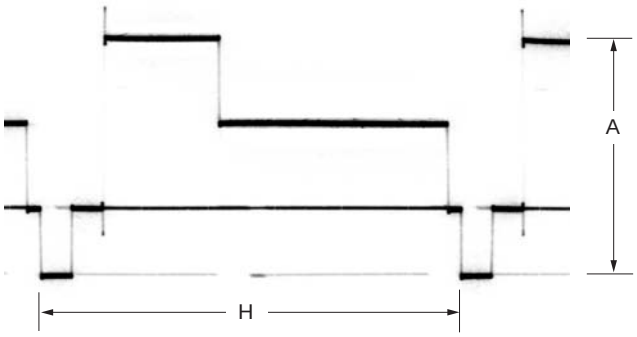


Fig. 6-3-3

2. S VIDEO OUT Chroma Level Adjustment (VC-416 board)

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Chroma signal terminal of S VIDEO plug of A/V OUT jack (75 Ω terminated) External trigger: Y signal terminal of S VIDEO plug of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	26, 27
Specified value	Cr level: A = 714 ± 14 mVp-p (NTSC) A = 700 ± 14 mVp-p (PAL) Cb level: B = 714 ± 14 mVp-p (NTSC) B = 700 ± 14 mVp-p (PAL) Burst level: C = 286 ± 6 mVp-p (NTSC) C = 300 ± 6 mVp-p (PAL)

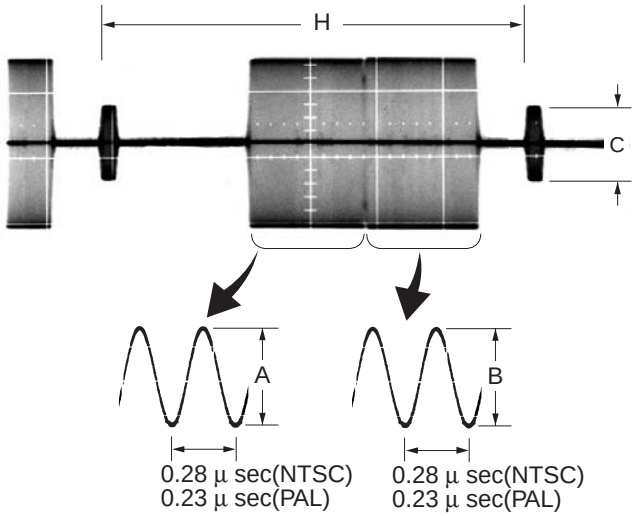


Fig. 6-3-4

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: NTSC model: DCR-HC26
PAL model: DCR-HC23E/HC24E/HC26E/HC35E

Switch setting:
1) DEMO MODE (Menu setting) ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	8	A0		Set the bit value of bit3 is "1", and press PAUSE (Write) button. (Note 3)
3	3	0C	02	Press PAUSE (Write) button.
4	C	26		Change the data and set the Cr signal level (A) to the specified value.
5	C	26		Press PAUSE (Write) button.
6	C	27		Change the data and set the Cb signal level (B) to the specified value.
7	C	27		Press PAUSE (Write) button.
8				Check the burst signal (C) to the specified value.
9	3	0C	00	
10	8	A0		Set the bit value of bit3 is "0", and press PAUSE (Write) button. (Note 3)
11	0	01	00	

Note 3: For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".

3. VIDEO OUT Level Check (VC-416 board)

Mode	CAMERA
Subject	Arbitrary
Measurement Point	Video terminal of A/V OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Specified value	Sync level: A = 286 ± 18 mVp-p (NTSC) A = 300 ± 18 mVp-p (PAL) Burst level: B = 286 ± 18 mVp-p (NTSC) B = 300 ± 18 mVp-p (PAL)

Note 1: Check that the data of page: 0, address: 10 is “00”.
Note 2: NTSC model: DCR-HC26
PAL model: DCR-HC23E/HC24E/HC26E/HC35E

Switch setting:
1) DEMO MODE (Menu setting) ..... OFF

Checking method:

Order	Page	Address	Data	Procedure
1	3	0C	02	Press PAUSE (Write) button.
2				Check the sync signal level (A) to the specified value.
3				Check the burst signal level (B) to the specified value.
4	3	0C	00	Press PAUSE (Write) button.

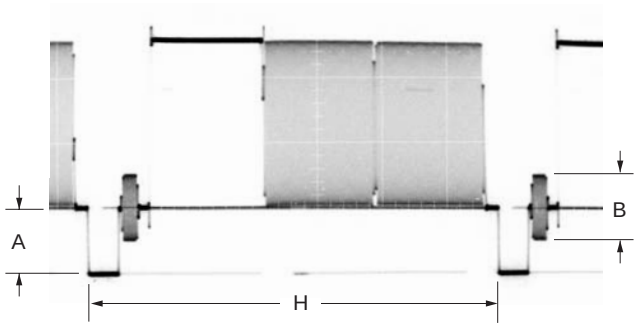


Fig. 6-3-5

3-5. AUDIO SYSTEM ADJUSTMENTS

[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 6-3-6.

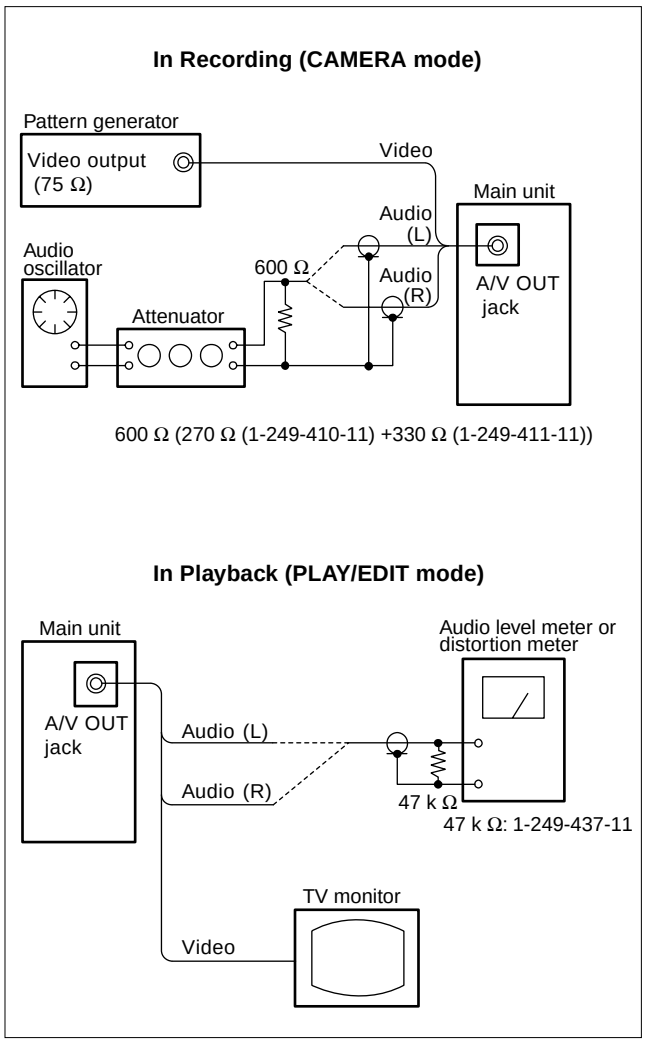


Fig. 6-3-6

1. Playback Level Check

Mode	Playback (PLAY/EDIT mode)
Signal	Alignment tape: For audio operation check (XH5-3 (NTSC)) (XH5-3P (PAL))
Measurement Point	Audio left or right terminal of A/V OUT jack
Measuring Instrument	Audio level meter and frequency counter
Specified Value	32 kHz mode: 1 kHz, + 3.0 ± 2.0 dBs 48 kHz mode: 1 kHz, + 3.0 ± 2.0 dBs 44.1 kHz mode: The 7.35 kHz signal level during EMP OFF is +2.0 ± 2.0 dBs. The 7.35 kHz signal level during EMP ON is –6 ± 2 dB from the signal level during EMP OFF.

Note: NTSC model: DCR-HC26
PAL model: DCR-HC23E/HC24E/HC26E/HC35E

Checking Method:
1) Check that the playback signal level is the specified value.

2. Overall Level Characteristics Check

Mode	Recording (CAMERA mode) and playback (PLAY/EDIT mode)
Signal	400 Hz, –7.5 dBs signal: Audio left and right terminal of A/V OUT jack
Measurement Point	Audio left or right terminal of A/V OUT jack
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 3.0 dBs

Checking Method:
1) Select page: 7, address: 05, and set the bit value of bit 7 to "1".
2) Input the 400 Hz, –7.5 dBs signal in the audio left and right terminal of A/V OUT jack.
3) Record the signal.
4) Remove the input signal.
5) Playback the recorded section.
6) Check that the 400 Hz signal level is the specified value.
7) Select page: 7, address: 05, and set the bit value of bit 7 to "0".

3. Overall Distortion Check

Mode	Recording (CAMERA mode) and playback (PLAY/EDIT mode)
Signal	400 Hz, –7.5 dBs signal: Audio left and right terminal of A/V OUT jack
Measurement Point	Audio left or right terminal of A/V OUT jack
Measuring Instrument	Audio distortion meter
Specified Value	Below 0.4% (200 Hz to 6 kHz BPF ON)

Checking Method:

1) Select page: 7, address: 05, and set the bit value of bit 7 to "1".
2) Input the 400 Hz, –7.5 dBs signal in the audio left and right terminal of A/V OUT jack.
3) Record the signal.
4) Remove the input signal.
5) Playback the recorded section.
6) Check that the distortion is the specified value.
7) Select page: 7, address: 05, and set the bit value of bit 7 to "0".

4. Overall Noise Level Check

Mode	Recording (CAMERA mode) and playback (PLAY/EDIT mode)
Signal	No signal: Audio left and right terminal of A/V OUT jack
Measurement Point	Audio left or right terminal of A/V OUT jack
Measuring Instrument	Audio level meter
Specified Value	Below –45 dBs (IHF-A filter ON, 20 kHz LPF ON)

Checking Method:

1) Select page: 7, address: 05, and set the bit value of bit 7 to "1".
2) Connect the audio left terminal of A/V OUT jack to GND using a jumper wire.
   Connect the audio right terminal of A/V OUT jack to GND using a jumper wire.
3) Record the signal.
4) Remove the jumper wires.
5) Playback the recorded section.
6) Check that the noise level is the specified value.
7) Select page: 7, address: 05, and set the bit value of bit 7 to "0".

5. Overall Separation Check

Mode	Recording (CAMERA mode) and playback (PLAY/EDIT mode)
Signal	400 Hz, –7.5 dBs signal: Audio <right> [left] terminal of A/V OUT jack No signal: Audio <left> [right] terminal of A/V OUT jack
Measurement Point	Audio <left> [right] terminal of A/V OUT jack
Measuring Instrument	Audio level meter
Specified Value	Below –40 dBs

< > : Left channel check
[ ] : Right channel check

Checking Method:

1) Select page: 7, address: 05, and set the bit value of bit 7 to "1".
2) Input the 400 Hz, –7.5 dBs signal in the audio <right> [left] terminal of A/V OUT jack.
   Connect the audio <left> [right] terminal of A/V OUT jack to GND using a jumper wire.
3) Record the signal.
4) Remove the input signal, and remove the jumper wire.
5) Playback the recorded section.
6) Check that the signal level of the audio <left> [right] terminal is the specified value.
7) Select page: 7, address: 05, and set the bit value of bit 7 to "0".

6-4. SERVICE MODE

4-1. ADJUSTMENT REMOTE COMMANDER (RM-95)

The adjustment remote commander (RM-95) is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander (RM-95) performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the Adjustment Remote Commander (RM-95)

1) Connect the adjustment remote commander to the LANC terminal.
2) Set the HOLD switch of the adjustment remote commander (RM-95) to "HOLD" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander (RM-95) will display as shown in Fig. 6-4-1.

Fig. 6-4-1

3) Operate the adjustment remote commander (RM-95) as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH- button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

   - Changing the address
     The address increases when the FF (►►) button is pressed, and decreases when the REW (◄◄) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (►) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed)
4) After completing all adjustments, turn off the main power supply (8.4 V) once.

2. Precautions Upon Using the Adjustment Remote Commander (RM-95)

Mishandling of the adjustment remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

4-2. ADJUSTMENT REMOTE COMMANDER (NEW LANC JIG)

The adjustment remote commander (New LANC Jig) is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander (New LANC Jig) performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the Adjustment Remote Commander (New LANC Jig))

1) Connect the adjustment remote commander (New LANC Jig) to the LANC terminal via the LANC cable (J-6082-442-A).
2) Set the slide switch of the adjustment remote commander (New LANC Jig) to "SERVICE" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander (New LANC Jig) will display as shown in Fig. 6-4-2.

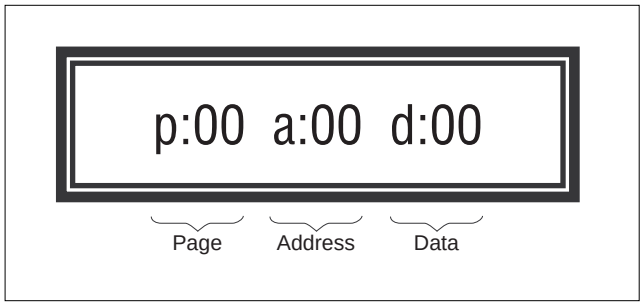


Fig. 6-4-2

3) Operate the adjustment remote commander (New LANC Jig) as follows.
   - Changing the page
     The page increases when the Page+ (▶▶) button is pressed, and decreases when the Page– (◀◀) button is pressed.
   - Changing the address
     The address increases when the ADD+ (▶) button is pressed, and decreases when the ADD– (▮▮) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the Data+ button is pressed, and decreases when the Data– button is pressed. There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The Write (■) button must be pressed to write the adjustment data in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed)
4) After completing all adjustments, turn off the main power supply (8.4 V) once.

2. Precautions Upon Using the Adjustment Remote Commander (New LANC Jig)

Mishandling of the adjustment remote commander (New LANC Jig) may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

4-3. DATA PROCESS

The calculation of the DDS display and the adjustment remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Indicates the hexadecimal-decimal conversion table.

Hexadecimal-decimal Conversion Table

Lower digit of hexadecimal / Upper digit of hexadecimal	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	77	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

② (above the D (d) column)

Note: The characters shown in the parenthesis ( ) shown the display on the adjustment remote commander.

(Example) If the DDS display or the adjustment remote commander shows BD (bd);
Because the upper digit of the adjustment number is B (b), and the lower digit is D (d), the meeting point "189" of ① and ② in the above table is the corresponding decimal number.

Table 6-4-1

4-4. SERVICE MODE

Note: Before performing the adjustment, check the data of page: 0, address: 10 is “00”. If not, select page: 0, address: 00, and set data “00”.

1. Setting the Test Mode

Page D	Address 10

Data	Function
00	Normal
01	Forced camera power ON (CAMERA mode)
02	Forced VTR power ON (PLAY/EDIT mode)
03	Forced camera + VTR power ON

- Before setting the data , select page: 0, address: 01, and set data: 01.
- For page A, the data set will be recorded in the non-volatile memory by pressing the PAUSE (Write) button of the adjustment remote commander. In this case, take note that the test mode will not be exited even when the main power is turned off (8.4 Vdc).
- After completing adjustments/repairs, be sure to return the data of this address to 00, and press the PAUSE (Write) button of the adjustment remote commander. And select page: 0, address: 01, and set data: 00.

2. Emergence Memory Address

2-1. Emergency Memory Address (Camera section)

Page 1F	Address 5A to 5D

Note: If reading/writing data on pages 1F, set data: 01 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 1F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Address	Contents
5A	EMG code when first error occurs
5B	EMG code when second error occurs
5C	EMG code when third error occurs
5D	EMG code when last error occurs

When no error occurs in this unit, data “00” is written in the above addresses (5A to 5D). when first error occurs in the unit, the data corresponding to the error is written in the first emergency address (5A). In the same way, when the second error occurs, the data corresponding to the error is written in the second emergency address (5B).
Finally, when the last error occurs, the data corresponding to the error is written in the last emergency address (5D).

Note: After completing adjustments, be sure to initialize the data of addresses 5A to 5D to “00”.

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	01	FD	Press PAUSE (Write) button.
3	6	02		Check the data changes to “01”.
4	6	01	00	Press PAUSE (Write) button.
5	0	01	00	

2-2. EMG Code (Emergency Code)

Codes corresponding to the errors which occur are written in 1F page, addresses 5A to 5D. The type of error indicated by the code are shown in the following table.

Code	Emergency Type
00	No error

2-3. Emergence Memory Address (Mechanism section)

Page C	Address F4 to FF

Address	Contents
F4	EMG code when first error occurs
F6	Upper: MSW code when shift starts when first error occurs Lower: MSW code when first error occurs
F7	Lower: MSW code to be moved when first error occurs
F8	EMG code when second error occurs
FA	Upper: MSW code when shift starts when second error occurs Lower: MSW code when second error occurs
FB	Lower: MSW code to be moved when second error occurs
FC	EMG code when last error occurs
FE	Upper: MSW code when shift starts when last error occurs Lower: MSW code when last error occurs
FF	Lower: MSW code to be moved when last error occurs

When no error occurs in this unit, data “00” is written in the above addresses (F4 to FF). when first error occurs in the unit, the data corresponding to the error is written in the first emergency address (F4 to F7). In the same way, when the second error occurs, the data corresponding to the error is written in the second emergency address (F8 to FB).
Finally, when the last error occurs, the data corresponding to the error is written in the last emergency address (FC to FF).
Note: After completing adjustments, be sure to initialize the data of addresses F4 to FF to “00”.

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	03	FF	Press PAUSE (Write) button.
3	3	01	37	Press PAUSE (Write) button.
4	3	02		Check the data changes to “00”.
5	3	03		Check the data changes to “00”.
6	0	01	00	

2-4. EMG Code (Emergency Code)

Codes corresponding to the errors which occur are written in C page, addresses F4, F8 and FC . The type of error indicated by the code are shown in the following table.

Code	Emergency Type
00	No error
10	Loading motor emergency during loading
11	Loading motor emergency during unloading
22	T reel emergency during normal rotation
23	S reel emergency during normal rotation
24	T reel emergency (Short circuit between S reel terminal and T reel terminal)
30	FG emergency at the start up of the capstan
40	FG emergency at the start up of the drum
42	FG emergency during normal rotation of the drum

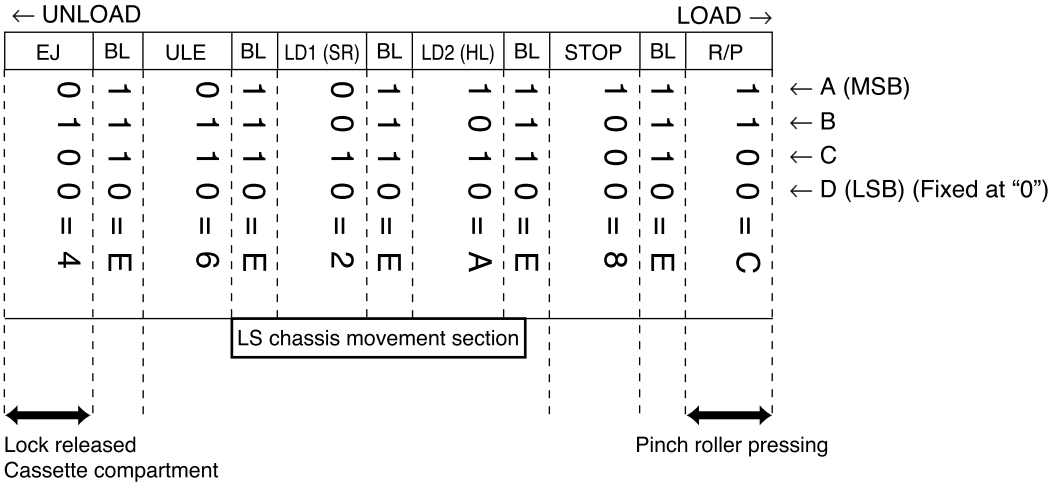
2-5. MSW Code

MSW when errors occur:
Information on MSW (mode SW) when errors occur

MSW when movement starts:
Information on MSW when movements starts when the mechanism position is moved (When the L motor is moved)

MSW of target of movement:
Information on target MSW of movement when the mechanism position is moved

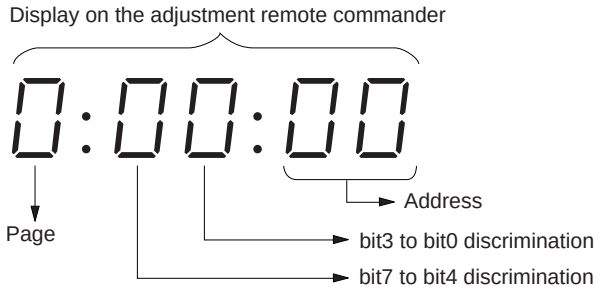
Mechanical Position



Position	Code	Contents
EJ	4	Position at which the cassette component lock is released, at the farthest unload side mechanically at which the mechanism can move no further in the UNLOAD direction.
BL	E	BLANK code, at the boundary between codes.
ULE	6	EJECT completion position. when the cassette is ejected, the mechanism will stop at this position. Cassette IN standby. The guide will start protruding out as the mechanism moves towards the LOAD position.
LD1 (SR)	2	When prepraing TOP load processing or when DEW is detected, rolling up tape by T reel is preformed at this position.
LD2 (HL)	A	When prepraing TOP load processing or when DEW is detected, rolling up tape by S reel is preformed at this position.
STOP	8	Stop position in the loading state. The pinch roller separates, the tension regulator returns, and the brake is imposed on both reels.
R/P	C	PB, REC, CUE, REVIEW, PAUSE, FF, REW positions. When pinch roller is pressed, and the tension regulator is ON, the mechanism is operating at this position in modes in which normal images are shown.
NULL	0	Code not existing in the MD. Default value.
	F	Status before finding any mechanism position.

3. Bit Value Discrimination

Bit values must be discriminated using the display data of the adjustment remote commander for the following items. Us the table below to discriminate if the bit value is “1” or “0”.



(Example) If the remote commander display is “8E”, bit value from bit 7 to bit 4 can be discriminated from the column Ⓐ, and those from bit 3 to bit 0 from column Ⓑ.

	Display on the adjustment remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A (R)	1	0	1	0
	B (b)	1	0	1	1
	C (C)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ	E (E)	1	1	1	0
	F (F)	1	1	1	1

4. Jack Check (1) (Handycam station) (DCR-HC35E)

Page 7	Address 80

Note: Check that the data of page: 0, address: 10 is “00”.

Bit	Function	When bit value = 1	When bit value = 0
0	CRADLE MULTI jack (CR-061 board CN002)	Used	Not used

Using method:

1) Select page: 7, address: 80.
2) By discriminating the bit value of display data, the state of jack can be discriminated.

5. Jack Check (2)

Page 7	Address 0C

Note: Check that the data of page: 0, address: 10 is “00”.

Bit	Function	When bit value = 1	When bit value = 0
2	A/V OUT jack (SI-051 board CN601)	Used	Not used

Using method:

1) Select page: 7, address: 0C.
2) By discriminating the bit value of display data, the state of jack can be discriminated.

6. Switch Check (1)

Page 2	Address 81

Note: Check that the data of page: 0, address: 10 is “00”.

Bit	Function	When bit value = 1	When bit value = 0
0	POWER (SS17000 block)	ON	OFF
1	MODE CHANGE (SS17000 block)	ON	OFF
2	DISP/BATT INFO (CF17000 block S004)	ON	OFF
3	EJECT (SS17000 block S001)	ON	OFF
4	CC DOWN (Mechanism chassis)	ON (DOWN)	OFF (UP)

Using method:

1) Select page: 2, address: 81.
2) By discriminating the bit value of display data, the state of switch can be discriminated.

7. Switch Check (2)

Page 7	Address 5C

Note: Check that the data of page: 0, address: 10 is “00”.

Bit	Function	When bit value = 1	When bit value = 0
3	REC PROOF SW (Mechanism chassis)	SAVE	REC

Using method:

1) Select page: 7, address: 5C.
2) By discriminating the bit value of display data, the state of switch can be discriminated.

8. Switch Check (3)

Page 2	Address 60 to 67

Note: Check that the data of page: 0, address: 10 is “00”.

Using method:

1) Select page: 2, address: 60 to 67.
2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0C	0D to 24	25 to 3F	40 to 5D	5E to 81	82 to AA	AB to D7	D8 to FF
60 (KEY AD0) (IC8001 J8)								
61 (KEY AD1) (IC8001 J9)	REC START/STOP (SB9000 block) (S001)	ZOOM W (SB9000 block) (S003)	ZOOM T (SB9000 block) (S002)	PANEL REVERSE (FP-386 flexble) (S101)				PANEL NORMAL (FP-386 flexble) (S101)
62 (KEY AD2) (IC8001 H8)	PHOTO (REC) (SS17000 block) (S002)				PHOTO (FREEZE) (SS17000 block) (S003)			No key input
63 (KEY AD3) (IC8001 G8)	EASY (CF17000 block) (S003)		BACK LIGHT (CF17000 block) (S002)		PANEL CLOSE (CF17000 block) (S001)			PANEL OPEN (CF17000 block) (S001)
64 (KEY AD4) (IC8001 F8)								
65 (KEY AD5) (IC8001 F9)	REC START/STOP (SS17000 block) (S004)							No key input
66 (KEY AD6) (IC8001 F7)								
67 (KEY AD7) (IC8001 J6)								

9. LED, IR Light Check

Page 7	Address 07	Bit5

Note: Check that the data of page: 0, address: 10 is “00”.

Using method:

1) Set the unit to camera mode.
2) Select page: 7, address: 07, and set the bit value of bit5 to “1”.
3) Check that all LED are lit, and that the IR light is lit.
4) Select page: 7, address: 07, and set the bit value of bit5 to “0”.

10. Record of Use Check (1)

Page 7	Address A4 to AF

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (SI-051 board BT601) is removed.

Note 2: When the drum was replaced, initialize the drum rotation counted time.

Note 3: Check that the data of page: 0, address: 10 is “00”.

Address	Function		Remarks
A4	Power supplying	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
A5	time	Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
A6		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A7	(BCD code)	Minute	
A8	Drum rotation	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
A9	counted time	Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
AA		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
AB	(BCD code)	Minute	
AC	Tape run time	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
AD		Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
AE		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
AF	(BCD code)	Minute	

Using method:

1) The record of use data is displayed at page: 7, addresses: A4 to AF.

Initializing method:

Order	Page	Address	Data	Procedure
1	7	A4	00	Press PAUSE (Write) button.
2	7	A5	00	Press PAUSE (Write) button.
3	7	A6	00	Press PAUSE (Write) button.
4	7	A7	00	Press PAUSE (Write) button.
5	7	A8	00	Press PAUSE (Write) button.
6	7	A9	00	Press PAUSE (Write) button.
7	7	AA	00	Press PAUSE (Write) button.
8	7	AB	00	Press PAUSE (Write) button.
9	7	AC	00	Press PAUSE (Write) button.
10	7	AD	00	Press PAUSE (Write) button.
11	7	AE	00	Press PAUSE (Write) button.
12	7	AF	00	Press PAUSE (Write) button.

11. Record of Use Check (2)

Page 7	Address D0 to D5

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (SI-051 board BT601) is removed.
Note 2: When the drum was replaced, initialize the drum rotation counted time.
Note 3: Check that the data of page: 0, address: 10 is "00".

Address	Function		Remarks
D0	Eject count without tape (BCD code)	Count (H)	100000th place digit and 10000th place digit of Eject count (decimal digit)
D1		Count (M)	1000th place digit and 100th place digit of Eject count (decimal digit)
D2		Count (L)	10th place digit and 1st place digit of Eject count (decimal digit)
D3	Eject count with tape (BCD code)	Count (H)	100000th place digit and 10000th place digit of Eject count (decimal digit)
D4		Count (M)	1000th place digit and 100th place digit of Eject count (decimal digit)
D5		Count (L)	10th place digit and 1st place digit of Eject count (decimal digit)

Using method:
1) The record of use data is displayed at page: 7, addresses: D0 to D5.

Initializing method:

Order	Page	Address	Data	Procedure
1	7	D0	00	Press PAUSE (Write) button.
2	7	D1	00	Press PAUSE (Write) button.
3	7	D2	00	Press PAUSE (Write) button.
4	7	D3	00	Press PAUSE (Write) button.
5	7	D4	00	Press PAUSE (Write) button.
6	7	D5	00	Press PAUSE (Write) button.

12. Record of Use Check (3)

Page 7	Address C8 to CD

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (SI-051 board BT601) is removed.
Note 2: Check that the data of page: 0, address 10 is "00".

Address	Function		Remarks
C8	User initial power on date (BCD code)	Year	After setting the clock, set the date of power on next
C9		Month	
CA		Day	
CB	Final condensation occurrence date (BCD code)	Year	
CC		Month	
CD		Day	

Using method:
1) The record of use data is displayed at page: 7, addresses: C8 to CD.

13. Record of Self-diagnosis Check

Page 7	Address B0 to C6

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (SI-051 board BT601) is removed.
Note 2: Check that the data of page: 0, address 10 is “00”.

Address	Self-diagnosis code
B0	“Repaired by” code (Occurred 1st time) *1
B1	“Block function” code (Occurred 1st time)
B2	“Detailed” code (Occurred 1st time)
B4	“Repaired by” code (Occurred 2nd time) *1
B5	“Block function” code (Occurred 2nd time)
B6	“Detailed” code (Occurred 2nd time)
B8	“Repaired by” code (Occurred 3rd time) *1
B9	“Block function” code (Occurred 3rd time)
BA	“Detailed” code (Occurred 3rd time)
BC	“Repaired by” code (Occurred 4th time) *1
BD	“Block function” code (Occurred 4th time)
BE	“Detailed” code (Occurred 4th time)
C0	“Repaired by” code (Occurred 5th time) *1
C1	“Block function” code (Occurred 5th time)
C2	“Detailed” code (Occurred 5th time)
C4	“Repaired by” code (Occurred the last time) *1
C5	“Block function” code (Occurred the last time)
C6	“Detailed” code (Occurred the last time)

*1 : “01” → “C”, “03” → “E”

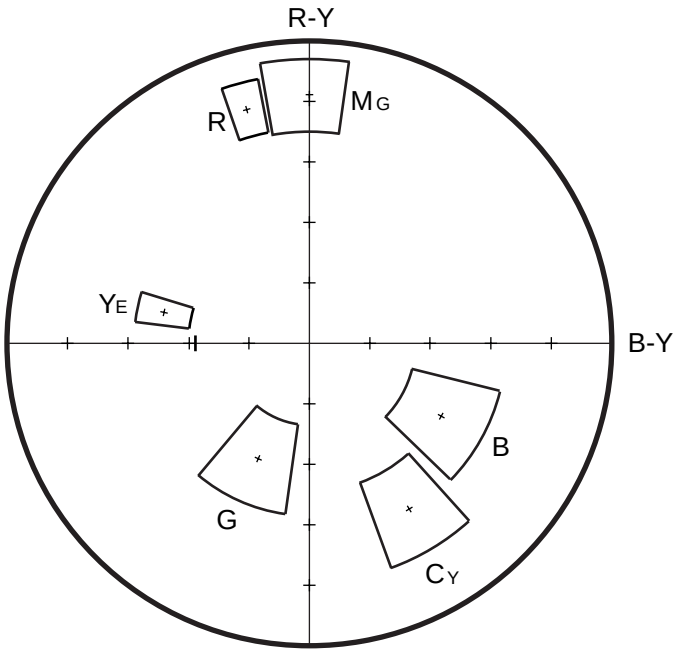
Using method:

1) The past self-diagnosis codes are displayed at page: 7, address: BC to C6. Refer to “1-5. SELF-DIAGNOSIS FUNCTION” of “SERVICE MANUAL, LEVEL 2” for detail of the self-diagnosis code.

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT

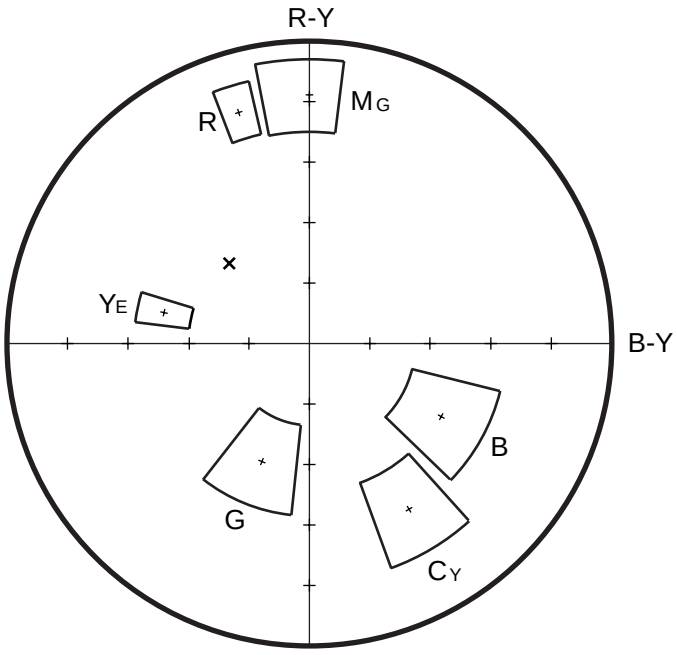
Take a copy of CAMERA COLOR REPRODUCTION FRAME with a clear sheet for use.

For NTSC model



DCR-HC26

For PAL model



DCR-HC23E/HC24E/HC26E/HC35E

Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2006.01	Official Release	—	—